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OF

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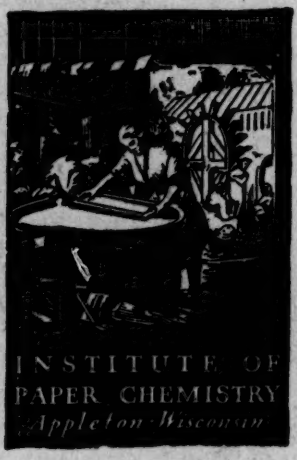

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JUNE • 1953

Volume 23 Number 10

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AUTHOR INDEX TO BOOKS

American Radio Relay League 700
Barkas, W. W. 701
Beilstein, F. K. 699
Besselievre, E. B. 701
Burgstaller, F. 700
Clark, J. M. 699
Danielli, J. F. 700
Davson, H. 700
Duerr, W. A., ed. 699
Fabel, K., ed. 700
Food and Agriculture Organization of the United Nations 699
Gilman, H., ed. 699
Green, J. B. 700
Hearmon, R. F. S. 701
Heikens, D. 699
Jost, W. 699
Korn, R. 700
Meredith, R., ed. 701
National Bureau of Economic Research 699
Ojala, O. O., ed. 700
Radley, J. A. 700
Rance, H. F. 701
Richter, F., ed. 699
Saarinen, E., ed. 700
Salanterä, P. 700
Samuelson, O. 700
U. S. Department of Agriculture .. 701
U. S. National Bureau of Standards 700
Vaux, H. J., ed. 699
Webber, J. M. 701

AUTHOR INDEX TO ABSTRACTS

Abramson, E. D. .....P 775
Ace Art Company .....P 766
Ace Carton Corporation .....P 769
Adams, C., Sr. .....P 774
Adams, H. E. 729
Agronin, T. 730
Airth, W. W. .....P 763
Albi Manufacturing Co. .....P 763
Alderson, A. J. 746
Alfredsson, B. 723
Altman, N. .....P 763
American Can Company .....P 760
American Cyanamid Company .....P 778
American Partition Corporation ....P 769
American Viscose Corporation. *Sylvania Division* 739
Anglo-American Council on Productivity 733
Anzenhofer, R. 722
Aquaness Corporation .....P 780
Arnold, G. 747
Atlanta Paper Company .....P 764
Aulin-Erdtman, G. 725
Ayroud, A. M. 724
Azorlosa, J. L. .....P 781
The Babcock & Wilcox Company....P 761
Back, E. 744
Backofen, E. R. .....P 773
Badenhuizen, N. P. 753
Bain, W. M. .....P 763
Baisch, S. J. 715
Bakelite Company (Canada) Limited .....P 776
Baker, E. D. S. 729
Baker, H. C. 707
Baldwin Instrument Company, Ltd... 742
Balon, W. J. .....P 768
Banks, M. S. .....P 774
Barkas, W. W. 743
Barker, E. F. 721
Barnes, E. T. 705
Barnes, M. C. .....P 774
Baron, T. 719
Barrow, S. W. 728
Bartell, F. E. 714
Bartes, A., Jr. .....P 771
Bartunek, R. 709
Beloit Iron Works .....P 771
Belsinger, S. P. .....P 778
Belsinger, Inc. .....P 779
Bemis Bro. Bag Company .....P 774
Benignus, P. G. .....P 775
Berglund, O. W. .....P 770
Berles Carton Company .....P 767
Bethge, P. O. 711
Bhatnagar, M. S. 723
Bigley, M. G. .....P 775
Billek, G. 725
Binns, W. J. 729
Birse, J. .....P 768
Bloom, L. J. 756
Bock, L. H. .....P 780
Boggio, M. P. 726
Booth, K. G. 754
Borden, G. C., Jr. .....744, P 768
Borg-Warner Corporation .....P 767
Bowman, J. R. .....P 780
Boyle, F. T. 734
Bradshaw, L. C. .....P 762
British Paper and Board Industry Research Association 704
British Printing Ink Association. *Technical Committee* 742
Broderick, F. W. .....P 766
Broughton, G. 755
Brown, L. H. .....P 773
Brownell, R. M. 718
Brubaker, D. W. 745
Bruins, P. F. .....P 780
Burnett, L. K. 707
Buttery, K. T. .....P 779
Cadaret, J. N. 732
Callaghan, C. V. 730
Canadian Pulp and Paper Industry 720, 745
Carbone, C. J., Jr. 743
Cardew, J. 736
Carlile, J. W. 752
Carlisle, L. O. 707
Cate, F. I. 704
Celanese Corporation of America....P 760
Central States Paper & Bag Company .....P 775
Chartrand, J. Y. 731
Chateau, H. 747
Chemical Engineering 739
Chopin, W. L. 746
Clark Equipment Company .....P 773
Clybourn Machine Corporation .....P 770
Coldwell, F. H. 753
Collins, R. 728
Compeau, G. M. 712
Conrad, C. M. 708, 710
Container Corporation of America .....P 764, P 774
Cook, H. A. .....P 762
Cook, M. A. 713
Cooley, E. C. 738
Cottrall, L. G. 718
Cox, J. W. .....P 767, P 773
Craig, F. A. 739
Creasy, J. J. 735
Critchfield, R. .....P 765
Cunningham, D. F. .....P 769
Cutler, I. B. 713
Czarnecki, J. D. .....P 760
Daisy Manufacturing Company .....P 766
Dalton, L. K. 702
Day, F. T. 702, 735, 736, 740
Deeney, J. J. 746
Deitsch, P. O. 703
De Meerleer, A. H. .....P 762
Denton, C. B. .....P 779
Déribére, M. 748
Dhingra, D. R. 723
Diehl, P. A. .....P 764

Dietz, R. 747
Di Franco, F. R. 750
Dixon, W. A. 746
Dodge, L. L. .....P 775
Donofrio, C. P. 711
Drew, D. E. .....P 776
du Pont de Nemours, E. I., and Company .....P 768, P 776
Eastman Kodak Company .....P 777
Eaton, L. B. .....P 772
Eckert, E. R. G. 721
Edling, G. 720
Egan, F. W. 726
Eichenlaub, R. L. 711
Ekco Products Company 734
Ekholm, E. .....P 761
Elliott, N. J. 715
Empkie, F. D., Jr. .....P 764
Enkvist, T. 723
Estee, R. G. .....P 777
Eymery, A. 724
Fagg, E. 740
Faichney, L. M. 742
Farrell, R. A. .....P 771
Faus, L. I. .....P 770
Fellows, H. 746
Felten, H. 749
Fessenden, A. C. .....P 769
Fibre Box Association 751
Firestone Tire & Rubber Company.. 751
Fish, J. J. .....P 781
Flateboe, E. I. .....P 769
Floyd, D. 749
Foote, R. W. 736
Forgac, J. P. 757
Forrer, H. W. .....P 764
Forziati, F. H. 718
Foster, D. H. 717
Fronmuller, G. D. 744
Franklin, S. W. 750
Fuchs, F. E. .....P 780
Fürstenau, E. 711
Fussell, H. E. 715
Gachet, H. 721
Gad, G. 711
Gaeke, L. B. .....P 766
Gardner, C., III. 732
Gavelin, G. 727
Gaver, K. M. .....P 767
Gay, R. 708
Germaix, A. 742
Gessner, J. 707
Glas-Kraft, Inc. .....P 777
The Glidden Company .....P 763
Gordon, J. 713
Gordon, L. 711
Grant, F. A. .....P 769
Grant, J. 714
Greathouse, G. A. 709
Gregg, S. J. 713
Grouse, R. A. .....P 776
Guba, F. A. 715
Gulf Research & Development Company .....P 781
Gunning, A. W. .....P 773
Haglund, G. .....P 760
Hair, E. .....P 776
Hallan, R. 743
Hallonquist, E. G. .....P 761
Hamilton, M. S. M. 758
Haner, V. C. .....P 761
Harker, C. B. .....P 770
Harris, G. M. .....P 762
Harrison, F. A. 720
Harrison, W. D. 706
Hartman, C. H. .....P 779
Hauck, W. E. .....P 764
Hayward, F. W. 721
Hazmburg, R. S. v. 749
Hearle, J. W. S. 755, 756
Henkle, O. T., Jr. 731
Hercules Powder Company .....P 781
Herfurth, O. R. 734
Hergert, H. L. 705
Herrlinger, R. 712
Hess, K. 758
Heywood-Wakefield Company 722
The Hickok, W. O., Mfg. Co. .....P 772
Higgins, S. .....P 776
High Production Machine Company, Inc. 726
Highland Manufacturing Company..P 775
Hill, K. J. 713
Hillman, F. J. 732
Hinds, G. P., Jr. 744
Hitchcox, H. F. 744
Hoague-Sprague Corporation .....P 773
Hoffman, A. W. 751
Hollinger, C. B. 747
Holme, G. N. 707
Hornbostel, L. .....P 771
Hough, C. S. .....P 766
Houston, G. N. .....P 772
Howard, E. J. 748
Howard, S. R. .....P 772, P 773
Huber, J. M., Corporation 752
Hug, D. P. .....P 781
Hunt, A. H., Capacitors Limited ...P 776
Hunt, C. M. 718
Huston, R. A. 732
Immergut, E. H. 733
Imperial Chemical Industries, Ltd., *Dyestuffs Division* 716
Industria Osakeyhtiö 763
Inland Container Corporation .....P 764
The Institute of Paper Chemistry ...P 765
International Bitumen Emulsions Limited .....P 762
Invincible Metal Furniture Company 734
Ivermark, R. 712
Iyengar, N. K. S. 740
Jack, G. R. 746
Jacobs, C. J. 751
Jewett, A. P. 736
Johnson, E. F. 756
Johnson, F. K. .....P 776
Johnson, L. W. .....P 761
Johnson, R. C. 753
Johnson, V. .....P 771
Jones, E. D., & Sons Company 730
Jones, G. .....P 763
Jones, J. E. .....P 760
Jones, T. S. 719
Jordinson, F. 714
Juda, W. .....P 763
Kahane, L. .....P 768
Kalamazoo Vegetable Parchment Co. P 766
Kammermeyer, K. 745
Kanis, P. 754
Kantrowitz, M. S. 705, 741
Kelminson, D. 741
Kent, George, Ltd. 722
Kettner, H. 724
Keyes Fibre Company .....P 774
Kilmartin, J. A. .....P 764
Kjaer, V. .....P 763
Kling, W. 718
Kloot, N. H. 744
Knowlton, C. D. .....P 773
Kollmann, F. 706
Koppers Company, Inc. .....P 775
Kotte, H. 748
Kratzl, K. 725
Kropa, E. L. .....P 778
Kuke and Spencer Ltd. 728
Kurth, E. F. 705
Kurtz, E. J. .....P 780
Kussow, L. E. 741
LaBarge, L. J. .....P 766
Laboratoire de Recherches et de Controle du Caoutchouc et de l'Amiante P 768
Laird, A. L. 741

Lang, W. 702
Langdon, S. W. .....P 770
Langenwalter, D. F. 728
Lasure, E. P. .....P 767
Latham, C. 746
Lees, A. 743
Leslie, A. P. 720
Levey, H. A. 710
Lewin, H. M. S. 738
Lewis, A. J. .....P 769
Lindahl, E. 717
Ling, R. 749
Lippmann, A. W. .....P 770
Lippmann, E. E. .....P 770
Lippmann Engineering Works .....P 771
Loeb, L. 710
McCabe, T. 736
McCammon, R. G. 707
MacGregor, J. G. 746
MacKeachie, J. G. 746
McKee, R. C. .....P 765
Magnani, A. .....P 762
Mahl, H. 718
Majumdar, B. N. 738
Manley, L. 737
Marathon Corporation .....P 771
Marcin, B. C. .....P 776
Mark, H. 733
Marshall, H. B. 723
Martin, D. M. 731
Martin, R. H. .....P 765
Masel, M. 722
Mason, S. G. 742
Mathieson Chemical Corporation ....P 772
Max, K. W. 757
Maycock, G. 734
The Mead Corporation .....P 778
Meier, R. 741
Meijer, H. W. .....P 781
Mercer, E. H. 758
Mezerik, A. G. 748
Minnesota Mining and Manufacturing Company Ltd. 741
Mitchell, J. A. .....P 776
The Monarch Marking System Company .....P 776
Monsanto Chemical Company .....P 775
Moore, A. T. 752
Morris, Herbert, Ltd. 731
Much, A. F. 734
Mueller, G. P. 744
Mueller, W. G. .....P 771
Müller, J. .....P 777
Mulnix, E. C. .....P 767
Nagle, H. J. .....P 770
Nagle, R. A. .....P 770
National Paper Box Manufacturers Association 750
National Southern Products Corporation .....P 780
Nauclér, B. 717
Neale, S. M. 709
Neubrech, W. L. 737
Newman, S. 710
Nigam, P. C. 723
Nimkar, M. V. 755
Noble, C. E. 753
Nord, F. F. 723
The Norwalk Paper Box Company...P 764
Norwegian Defence Research Establishment 731
The Ohio State University Research Foundation .....P 767
Olavi, S. 712
Oldshue, J. Y. 728
Olsen, M. H. .....P 765
Oppenheim, A. K. 719
The Orr Felt & Blanket Company...P 770
Ostertag, H. 708
Oswin, C. R. 745
Ottar, H. 755
Owen, R. S. 752
Ozols, K. V. .....P 777
Paper Box and Bag Maker 726
Paper Mill News 719, 737
Paper Strap, Inc. .....P 769
Parker, E. E. .....P 774
Pear, C. C. 743
Pederson, W. H. 737
Peerman, D. 749
Petz, A. 702
Pfeifer, C. W. .....P 782
Pierson, G. .....P 773
Pigford, R. L. 731
Pilot Surveys, Inc. 703
Pittsburgh Plate Glass Company ...P 775
Plywood Research Foundation .....P 761, P 762
Pneumatic Scale Corporation, Limited .....P 772, P 773
Pollak, A. 755
Pollux-Trust .....P 777
Poole, W. J. .....P 774
Popper, C. .....P 779
Potdevin, A. .....P 770
Potdevin Machine Company .....P 770
Poulter, A. C. 749
Pouradier, J. 747
Preston, J. M. 755
Product Development Laboratories, Inc. .....P 777
Publicker Industries Inc. .....P 782
Puget Sound Pulp and Timber Co. ..P 761
Pulp and Paper Magazine of Canada 738
Pulsometer Engineering Company, Ltd. 757
Quick, J. H. .....P 780
Ralph, J. E. G. 717
Rather, J. B., Jr. 744
Ray, B. R. 714
Rayonier Incorporated .....P 780
Reinharz, M. 709
Richter, G. A. 714
Ridenour, W. P. .....P 780
Riegel Paper Corporation .....P 768
Robertson, F. O. .....P 767
Robinette, H., Jr. .....P 782
Rose, A. 753
Rosenthal, H. .....P 770
Rounseville, E. A. .....P 777
Rusca, R. A. 708
Rushton, J. H. 728
St. Regis Paper Company .....752, P 779
Saletore, S. A. 704
Salo, M. .....P 777
Saunders, W. G. .....P 761
Savage, R. H. .....P 777
Scalingi, C. R. .....P 766
Schilk, J. A. 753
Schindler, H. 744
Schoedler, K. 754
Schönfeld, T. 709
Schubert, D. L. .....P 762
Schurz, J. 733
Schwenker, R. F., Jr. 708
Schwertfeger, W. J. .....P 774
Seaborne, C. R. 737
Sears, G. R. .....716, P 765
Shank, C. S. .....P 765
Shapiro, D. H. .....P 767
Shaw, J. M. .....P 770
Shellmar Products Corporation .....P 767, P 773
Shenolikar, G. S. 704
Singleton, J. C., Jr. .....P 761
Sittig, M. 719
Skaugen, L. 743
Smidth, F. L., & Co. .....P 762
Sparks, G. C. .....P 765
Sporck, C. R. 719
Spurr, W. F. .....P 766
Stahl, W. F. .....P 765

Stawitz, J. 710
Stempel, L. M. 707
Stevens, G. de 723
Stewart, C. M. 717
Stoakes, H. R. 735
Stott, R. R. .....P 760
Sulphite Pulp Manufacturers' Research League, Inc. 754
Sumner Iron Works .....P 769
Sun Chemical Corporation .....P 781
Sutherland Paper Company .....P 779
Sutton, J. M. .....P 771
Swanson, J. W. 716
Taylor, W. 729
Teale, B. E. .....P 772
Terhune, G. A., Jr. .....P 779
Thiele, H. 724
Thomas, L. M. .....P 767
Thompson, J. O. 716
Thompson, R. A. 751
Thompson, R. J. .....P 772
Thomson, A. G. 719
The Thrissell Engineering Company, Ltd. 723
Thunell, B. 720
Timell, T. E. 711
Todd, R. W. .....P 780
Traynard, P. 724
Treiber, E. 702
Trenschel, R. 716
Truesdail, J. H. 708
Tuck, N. G. M. 742
Vaillé, E. 721
Varron, F. A. 746
Venet, A. M. 747
Verwayen, J. J. 757
Viner, J. W. 708
Vinson, L. J. 732
Vivian, H. F. .....P 777
Wade, C. F. 713
Walter, L. 703, 722, 727, 732
Wannow, H. A. 749
Wardrop, A. B. 759
Warren, S. D., Company .....P 778
Weinstein, S. A. 746
Weiss, A. C. H. .....P 778
Werner, A. W. 726, 727
Wesley, R. O. .....P 766
West, C. J. 742
Weston Electrical Instrument Corporation .....P 779
Whiteley, W. 705, 721
Whittaker, J. H. .....P 780
Whitwell, J. C. 708
Williams, A. E. 703, 753
Williams, R. .....P 766
Williamson, G. R. 709
Willis, C. H. .....P 766
Wilson, B. W. 730
Wilson, H. D. .....P 779, P 780
Witco Chemical Company 751
Wohnsiedler, H. P. .....P 778
Woodward, E. R. 704
Worthen, S. V. .....P 778
Yates, W. J. 744
Zaheer, S. H. 704

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Books and Pamphlets Added to the Library During May

BUSINESS CYCLES

CLARK, JOHN MAURICE. Strategic factors in business cycles. With an introduction by the Committee on Recent Economic Changes. New York, National Bureau of Economic Research in cooperation with the Committee, 1935, reprinted 1949. 238 p.

CHEMISTRY, ORGANIC

BEILSTEIN, FRIEDRICH KONRAD. Beilsteins Handbuch der organischen Chemie. 4. Auflage. Zweites Ergänzungswerk, die Literatur von 1920-1929 umfassend, herausgegeben und bearbeitet von Friedrich Richter. Berlin, etc., Springer-Verlag, 1953. 20. Band. 395 p.

GILMAN, HENRY, ed. Organic chemistry; an advanced treatise. New York, Wiley [c1953] v. 3 and 4. 1245 + 28 p.

DIFFUSION

JOST, W. Diffusion in solids, liquids, gases. New York, Academic Press, 1952. 558 p.

DISSERTATIONS, ACADEMIC

HEIKENS, DERK. Dichroism of dyed cellulose fibres. Proefschrift ter verkrijging van de graad van doctor in de wis- en natuurkunde an de Rijks-Universiteit te Groningen . . . Utrecht, Drukkerij Fa. Schotanus & Jens, 1952. 92 p.

FOREST MANAGEMENT

DUERR, WILLIAM A., and VAUX, HENRY J., ed. Research in the economics of forestry. Washington, Charles Lathrop Pack Forestry Foundation, 1953. 475 p.

FOREST PRODUCTS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. European timber statistics 1913-1950. Geneva, The Organization, 1953. 30 p. and numerous tables.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Yearbook of forest products statistics, 1952. Rome, The Organization, 1952. 171 p.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS AND THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE. European timber trends and prospects; a study prepared jointly by the secretariats . . . Geneva, The Organization, 1953. 315 p.

ION EXCHANGE

SAMUELSON, OLOF. Ion exchangers in analytical chemistry. New York, Wiley [c1953] 291 p.

PAPER—TESTING

KORN, RUDOLPH, und BURGSTALLER, FRIEDRICH. Papier- und Zellstoff-Prüfung. 2. erw. Aufl. Berlin, etc., Springer-Verlag, 1953. 528 p. + 39 tables.

PAPER MAKING AND TRADE

[GREEN, J. BARCHAM] Papermaking by hand in 1953 [London, S. C. Phillips & Co., 1953] 16 p.

PERMEABILITY

DAVSON, HUGH, and DANIELLI, J. F. The permeability of natural membranes; with a foreword by E. Newton Harvey. Cambridge, University Press, 1952. 365 p.

PLASTIC MATERIALS

DEUTSCHES JAHRBUCH für die Industrie der plastischen Massen 1951/1952; ein praktisches Nachschlagewerk über den derzeitigen Stand der Industrie. [7. Ausgabe] Herausgegeben von Karl Fabel. Berlin-Wilmersdorf, Wilhelm Pansegrau Verlag [c1953] 646 p.

RADIO

The RADIO AMATEUR'S handbook by the Headquarters staff of the American Radio Relay League. 30th ed. West Hartford, Conn., The League, 1953. 548 + 60 + 192 p.

STARCH

RADLEY, J. A. Starch and its derivatives. 3d. ed. rev. London, Chapman & Hall, 1953. v. 1. 510 p.

TRADE DIRECTORIES

The FINNISH TIMBER and paper calendar, 1952. 8th ed., ed. by Esko Saarinen and Pentti Salanterä following the principles laid by Onni O. Ojala. Helsinki, Finland, Frenckellska Tryckeri Aktiebolaget, 1952. 530 p.

U. S. NATIONAL BUREAU OF STANDARDS—PUBLICATIONS

U. S. NATIONAL BUREAU OF STANDARDS. Publications of the National Bureau of Standards, 1901 to June 30, 1947. National Bureau of Standards circular 460. Washington, U. S. Govt. Print. Off., 1948. 375 p.

U. S. NATIONAL BUREAU OF STANDARDS. Supplementary list of publications of the National Bureau of Standards, July 1, 1947, to

June 30, 1952 (with subject and author indexes). Supplement to National Bureau of Standards circular 460. Washington, U. S. Govt. Print. Off., 1952. 223 p.

VISCO-ELASTICITY

MEREDITH, R., ed. Mechanical properties of wood and paper, by W. W. Barkas, R. F. S. Hearmon, and H. F. Rance. Amsterdam, North-Holland Publ. Co., 1953. 298 p.

WATER—POLLUTION

BESSELIEVRE, EDMUND B. Industrial waste treatment. New York, McGraw-Hill Book Co., 1952. 391 p.

YUCCA

WEBBER, JOHN MILTON. Yuccas of the Southwest. U. S. Dept. of Agriculture. Agriculture monograph no. 17 [Washington, U. S. Govt. Print. Off., 1953] 97 p. + 63 plates.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ABSORPTION SPECTRA

TREIBER, E., and LANG, W. Light absorption of cellulose derivatives. II. The ultraviolet absorption spectrum of cellulose acetate and nitrate. Melliand Textilber. 33, no. 11: 1021-4 (November, 1952). [In German; English, French, and Spanish summaries]

In studying the effect of ultraviolet light on cellulose fibers, solutions in various solvents of a number of cellulose derivates, particularly cellulose acetate (I) and cellulose nitrate (II), were examined for their absorption in the ultraviolet region. In the case of (I) and (II), a selective absorption was observed almost exclusively in the region of the true absorption of the simple acid esters. At longer wavelengths, i.e., above 3000 to 3700 A., only an apparent absorption is exhibited caused by the Tyndall diffusion of macromolecular substances. The authors emphasize the possibility of reaching incorrect conclusions in the absence of a true absorption with regard to the absorption behavior of the compounds under consideration. 6 diagrams and 34 references. E.S.

ADHESIVES

DALTON, L. K. Resins from sulphited tannins as adhesives for wood. Australian J. Appl. Sci. 4, no. 1: 136-45 (March, 1953).

Tannin solutions after heating with sulfites have low viscosities and are suitable for the preparation of adhesives to be spread by mechanical rolls. The conditions for treatment with sulfite were determined for extracts from *Eucalyptus crebra* F.v.M. and *Pinus radiata* D. Don and for commercial mimosa extract. The sulfited tannin solutions, mixed with paraformaldehyde and a filler, were examined as adhesives for plywood. Strong, water-resistant bonds were obtained with all three adhesives. 3 tables, 9 figures, and 4 references. E.S.

PETZ, ALBERT. Novel urea resins for the paper-converting industry. Kunststoffe 43, no. 3: 103-5 (March, 1953). [In German]

The author reviews the development of water-soluble urea-resin adhesives which can be used in the manufacture of gummed papers, tapes, and labels, and on high-speed packaging machinery, particularly in the form of mixtures with dextrin or animal glues. The influence of temperature and time on urea-animal glue mixtures is discussed and the results are presented in tabular form. The possible application to dry abrasive papers is mentioned. 6 tables, 2 figures, and 5 footnotes. E.S.

ADVERTISING

DAY, FREDERICK T. Paper conversion and usage. No. 46. Mailing the Coronation sample folder. World's Paper Trade Rev. 139, no. 9: 624, 626 (Feb. 26, 1953); *cf.* B.I.P.C. 23: 740.

Directions for the successful planning and mailing of sample folders are given; the papermaker's own direct mail should be based on what paper can really do for industry and commerce. E.S.

DEITSCH, PHILIP O. How beneficial results can be achieved through intelligent cooperation. Am. Paper Merchant 50, no. 4: 18-19, 62 (April, 1953).

The author recounts the efforts of the Gummed Industries Association in the past five years to help the wholesaler sell gummed tape through customer education. Films, brochures, posters, and instruction manuals prepared by the association emphasize proper sealing methods and point up savings in shipping loss and damage. 1 illustration. L.C.

PILOT SURVEYS INC., *Chicago.* Container an effective ad medium. Boxboard Containers 71, no. 725: 50 (May, 1953).

The advertising agency recently conducted a private survey for Stone Container Corp. to determine the number of people who can be reached by the advertising printed on the outside of a shipping box. It was estimated that the television set box used in the survey was exposed to the view of 625 persons and probably seen by 230. The method of conducting the survey is described. L.C.

AIR CONDITIONING

WALTER, LEO. Controlled air conditions in the factory. Paper Box Bag Maker: 39-40 (January, 1953); Paper Market: 12, 15 (January, 1953); *cf.* B.I.P.C. 23: 309-10.

The air-conditioning plant of a printing shop is described. 2 illustrations. E.S.

WILLIAMS, A. E. Air conditioning in the paper industry. World's Paper Trade Rev. 139, no. 18: 1351-2, 1354, 1359 (April 30, 1953).

Since the humidity conditions of different types of paper vary over a wide range, each case of air conditioning in the paper-converting industry must be designed individually to meet the different requirements. The plant has to be capable of maintaining uniform temperature and relative humidity throughout the working rooms with a high degree of accuracy in the control of the ever-changing conditions. Various types of equipment are discussed, including automatic control by compressed air or water pressure and by electricity, and the use of activated alumina for air drying. 3 figures. E.S.

AIR FILTERS

ANON. Air filter uses material developed for gas masks. Ind. Labs. 4, no. 5: 113-16 (May, 1953).

Filter material of superior quality for the removal of air-borne particles as fine as 0.5 to 0.1 μ in sheet form is prepared from a pulp containing Bolivian or African blue asbestos fibers and esparto cellulose fibers treated with Silene (a precipitated hydrated calcium silicate). The continuous sheets are fan-folded over specially prepared corrugated paper and sealed into frames. The completed filter units are tested with dioctyl phthalate smoke and those showing 0.5% or more passage are rejected. The filter units are used for the elimination of any kind of atmospheric contamination, including dust and radioactive particles, in respirator filters for working under sterile conditions, and similar applications. 5 figures. E.S.

AIR POLLUTION

CATE, F. L. Design of chimneys for odor dispersion. Tappi 36, no. 5: 225-8 (May, 1953).

The author discusses the possible relief from odor dispersion and air pollution which will result from the construction of a modern industrial chimney. A theory has been developed that at a distance of 10 times the chimney height smoke concentration at ground level reaches a maximum. Concentration at that maximum varies inversely as the square of the chimney height and, at distances greater than 50 chimney heights, the concentration varies as the inverse square of the distance and is independent of the chimney height. This tends to show that by doubling the chimney height, the maximum ground concentration can be materially reduced. However, regardless of height, some distant places will at some time be affected by the discharge of the contamination. There are various means of eliminating more positively the odors and contaminants than by depending on a chimney of a certain height. Collectors of various mechanical and electrical types, where properly applied, will eliminate to a great extent many injurious contaminants. A chimney alone is not the answer to odor elimination, but a chimney carefully designed for the service intended will aid in delivering the gases at a height so that, when spread out over a certain area, the ground concentration will be minimized. 4 references. E.S.

WOODWARD, ERIC R. Chlorine dioxide for odor control. Tappi 36, no. 5: 216-21 (May, 1953).

The use of chlorine dioxide for the abolishment of obnoxious odors has met with success on a commercial scale in a limited number of industrial plants. Since the use of chlorine has not solved the problem of effluent gases which contain methyl and ethyl amines, hydrogen sulfide, and mercaptans, it appears that this is one more case where chlorine dioxide yields a specific result which is not accomplished by either chlorine or oxygen alone. As with any other chemical remedy, efficient contact between chlorine dioxide and the offending odors is essential. This involves proper ventilation of buildings where the odors originate, adequate collection and transfer of the odor-bearing medium to the point of treatment, and efficient scrubbing of the odorous materials before release to the surrounding atmosphere or terrain. 8 figures and 21 references. E.S.

ALPHA PULP

SHENOLIKAR, G. S., SALETORE, S. A., and ZAHEER, S. HUSAIN. Cellulosic raw materials for acetate rayon manufacture. Indian Pulp and Paper 7, no. 9: 427-32 (March, 1953).

Four Indian cotton mill-wastes (licker-in fly, droppings no. 1, roller pickings, and oily cotton) have been analyzed and digested to test their suitability as sources of chemical cotton for the manufacture of cellulose acetate yarn, since imported cotton linters are too expensive and the local Indian production is still in its infancy. On the basis of their α-cellulose content, the first three are expected to be suitable, especially licker-in fly. The high ash content can be reduced by acid washing. The first three materials have been examined by a British manufacturer both raw and after conversion to chemical cotton; all three have been pronounced suitable. Availabilities and prices of cotton-mill wastes in India are quoted. 6 tables. E.S.

ASSOCIATIONS

BRITISH PAPER AND BOARD INDUSTRY RESEARCH ASSOCIATION.

Survey of research progress. World's Paper Trade Rev. 139, no. 9: 631-2, 634, 637-8; no. 10: 715-16, 718, 721 (Feb. 26, March 5, 1953); *cf.* B.I.P.C. 22: 522.

Excerpts from the eighth annual report of the Association (covering the period from Oct. 1, 1951 to Sept. 30, 1952) are presented, with particular reference to research work carried out on bleaching, coating, moldproofing, water-vapor resistance, effluent disposal, pulp washing and soda recovery, pulping, mechanism of water removal on Fourdrinier paper machines, drying, paper testing and instrumentation, microscopy, beating, technical inquiries, and library and information service. E.S.

WHITELEY, WILLIAM. Research Association. World's Paper Trade Rev. 139, no. 6: 412, 414, 416, 421-2, 424 (Feb. 5, 1953); Paper-Maker (London) 125, no. 2: 107-8 (February, 1953). [Abridgment]

The activities of the British Paper and Board Industry Research Association for the year 1951/52, its eighth year, the research progress, and the research program are reviewed. E.S.

BAGASSE

KANTROWITZ, M. S. Sugar cane bagasse for paper and board. Printing Equip. Engr. 83, no. 8: 25 (May, 1953).

Pith removal and methods of producing bagasse pulp, bagasse pulp and paper mills, and the results of bagasse-newsprint performance tests are touched upon very briefly. L.C.

BARK

HERGERT, H. L., and KURTH, E. F. The isolation and properties of catechol from white fir bark. J. Org. Chem. 18, no. 5: 521-9 (May, 1953).

White fir (*Abies concolor*) bark, pre-extracted with benzene, when extracted further with ether yielded *d*-catechol (3,3',4',5,7-pentahydroxyflavan) (I) and its trans form (*l*-epicatechol) (II). (I) occurs in two crystalline modifications, melting at 219°C. and 176-177° respectively; these show identical infrared spectra, and optical rotations, but different x-ray diffraction patterns. (II) melts at 245°. Mixtures of (I) and (II) are found in very small amounts in firwood, but are concentrated in the cork of the outer bark, in which crude yields range from about 6 to 16.6%. The pentamethyl derivative of (II), melting at 110-113° was obtained by reducing pentamethyl dihydroquercetin with amalgamated zinc. *d*-Dihydroquercetin (III) was obtained from the cork of Douglas-fir bark. The infrared spectra of (I), (II), and (III), and their acetates are given and interpreted. 3 tables, 3 figures, and 20 references. L.E.W.

BLEACHING—GROUNDWOOD

BARNES, E. T. A recent investigation of variables in zinc hydrosulphite bleaching of groundwood. Can. Pulp Paper Ind. 6, no. 4: 126, 128, 130, 132, 134, 137-8 (April, 1953).

The author outlines the procedures employed and the results of investigations of temperature, time, consistency, and pH variables in the zinc hydrosulfite treatment of groundwood produced from Western hemlock. It was found that the reaction time establishes the brightness level in the first 20-minute period; after the initial period the rate of brightness increase is sub-

stantially reduced. Brightness levels obtained at high temperatures and short retention times cannot be expected from long treatments at low temperatures because of zinc hydrosulfite decomposition and other secondary reactions. A loss in brightness may occur if the treatments at high temperatures are too long. Brightness increases in increments of 0.4 to 0.5 units for each 10° rise in temperature from 80 to 135°F. For efficient bleaching, a 45-minute retention is required at 135° and a 60-minute retention at 120°. Similar increases in retention can be expected at lower temperatures. An additional 40% increase in brightness can be obtained by ideal pH control. The most favorable pH values are: 3.5 for bleaching, 2.5 for washing, and 4.5 to 5.5 for sheetmaking. High consistencies (3% or more) are required for efficient bleaching; for the same zinc hydrosulfite usage, the brightness increase at 3% consistency is more than double that obtained at 1% stock consistency. 11 diagrams and 6 references. E.S.

BLEACHING—SULFATE

HARRISON, WARD D. Bleaching with chlorine dioxide. Tappi 36, no. 5: 142-5A (May, 1953); Southern Pulp Paper Mfr. 16, no. 5: 32, 34, 36 (May, 1953).

The manufacture and use of chlorine dioxide (I) in bleaching wood pulp from southern woods at the mill of the Riegel Carolina Corp. are described. The process involves six continuous reactions, of which the first five are conventional and not considered in this article; only the sixth high-density, chlorine dioxide stage is discussed. The pulp entering this stage is in the G.E. brightness range of 60 to 70. The results indicate that with less than 1% (I) and with very little, if any, loss in strength, this range can be extended to 80 to 90 G.E. brightness. The cleanliness of this pulp is remarkable. Toxicity and explosion hazards are pointed out, as well as difficulties with constructional materials, although these are gradually being overcome. The author emphasizes the need for much additional work to improve the process as it is being carried out at present, including a more efficient production of (I), better and more corrosionproof constructional materials, and a method of applying (I) to pulp at considerably higher consistencies. 2 tables. E.S.

BOARD

KOLLMANN, F. The manufacture and properties of chipboard of the Norddeutsche Homogenholzgesellschaft m.b.H., at Triangel. Holz Roh- u. Werkstoff 10, no. 12: 463-8 (December, 1952). [In German]

The different phases in the manufacture of chipboard by a dry process based on the patents of the Holig-Homogenholzwerke at Baiersbronn are described; they involve: comminution to correct size and shape (S-chips), sorting, drying to 65-68°C. with simultaneous dust removal, mixing with synthetic resins, formation of boards, preliminary and actual pressing of the boards in a heated press, and control and conditioning. The raw material consists of first thinnings of coniferous (mostly pine) and deciduous woods and some cordwood; phenol and urea resins are used as adhesives. The resulting boards are suitable for table tops, wallboards, flooring, and similar applications. The plant was destroyed by a fire in October, 1952; its reconstruction with improvements is planned. 1 table, 14 figures, and 2 references. E.S.

BOARD—CONVERSION

ANON. The Connelly story—a Philadelphia epic. Fibre Containers 38, no. 4: 50, 52, 54-6 (April, 1953).

The story of the rebuilding of the Connelly Containers box plant in Philadelphia is told. The entire plant was destroyed by fire on Jan. 24, 1953 and by March 4, with the help of competitors, suppliers, and friends, a new plant was in operation. 9 illustrations of the plant. L.C.

BAKER, HORACE C. Coloring machines for boxboard. Tappi 36, no. 5: 162-3A (May, 1953).

Following a brief historical introduction, the author discusses the development and different types of available converting machinery for coloring boxboard. E.S.

CARLISLE, L. O. Color coating. Tappi 36, no. 5: 158-60A (May, 1953).

The author describes the color coating of linerboard by four common methods—i.e., intaglio or etched rolls, pattern rolls, solid-rubber rolls, and metering rolls. The results depend more upon the base of the coating employed than the method of application. Ink, casein, soy-protein, and starch-base coatings are most frequently used. Ink is satisfactory in any application; however, it is rather expensive. The other three coatings have a tendency to give a pronounced ripple, particularly when color is added. E.S.

GESSNER, JOSEPH. Color coating container board. Tappi 36, no. 5: 160-2A (May, 1953).

Whereas the construction features of corrugated containers have received considerable attention, very little has been done to improve their appearance, except for specific uses. The author discusses the unlimited possibilities of over-all coloring and printing of kraft liners used for the outside construction of corrugated containers to improve their surface appearance, with particular reference to color coating as part of the conversion operation. Recent developments in the process, the proper selection of colors, and coating formulations are described. In developing suitable formulations, primary consideration must be given to light fastness, wet-rubbing resistance, and economy. 3 tables. E.S.

HOLME, GEORGE N. Corrugated liner—web printing—production problems. Tappi 36, no. 5: 164-6 (May, 1953).

The author describes some of the difficulties encountered in the production of colored and printed linerboard at the Stone Container Corp., Chicago. E.S.

MCCAMMON, R. G., and BURNETT, L. K. Problems in coloring and decorating liner board. Tappi 36, no. 5: 164A (May, 1953).

Operational problems (including materials and equipment) in the use of a commercial coloring machine with aniline (flexographic) and gravure stations employed by the Ohio Boxboard Co., Rittman, Ohio are outlined briefly. E.S.

STEMPEL, L. M. Equipment for color coating. Tappi 36, no. 5: 156-8A (May, 1953).

The author describes different types of multicolor printing presses for few and as many as 16 colors, and aniline and rotogravure presses built by the John Waldron Corp. (which has been allied with the paper-converting industry for a period of 126 years). 10 figures. E.S.

VINER, JOSEPH W. Coloring and pattern printing of corrugated liner stock. Tappi 36, no. 5: 166-7A; discussion: 167A (May, 1953).

The author reviews briefly the development of the process by the Continental Color Corp. around 1934 and the improvements made by International Printing Ink (now Interchemical Corp.) in machinery and color solutions after it acquired all the rights to this process. E.S.

CELLOPHANE

TRUESDAIL, JOHN H. Cellophane . . . its development and applications. Am. Paper Converter 27, no. 4: 19-21 (April, 1953).

Cellophane is manufactured in a wide variety of forms for many applications. The author briefly describes the properties of some of the basic cellophane films and discusses the printing methods which are preferred by packagers. He also points out some of the technical problems which converters must meet in order to produce the high-quality cellophane packaging required for successful merchandising. 3 illustrations. L.C.

CELLULOSE—CRYSTALLINITY

GAY, R. The crystallinity of cellulose. Assoc. tech. ind. papetière, Bull. no. 2: 53-60 (1953). [In French]

The author outlines work on the fine structure of cellulose and present-day evidence for the existence of submicroscopic crystallites (I). In one section, the determination of length and size of (I) from interpretations of x-ray techniques is discussed critically. 14 figures. L.E.W.

CELLULOSE—DEGRADATION

CONRAD, CARL M., and RUSCA, RALPH A. Viscometric studies of cellulose in cotton in relation to mechanical processing. Textile Research J. 23, no. 3: 168-74 (March, 1953).

Viscosity determinations were made on cotton after various types of mechanical treatment such as grinding in a Wiley mill, multiple passage through a new type of cotton opener, and processing into yarn on conventional textile machinery. Samples taken from a previous study by Krieble and Whitwell (*cf.* B.I.P.C. 20: 78) were also included. Treatment of the viscosity data by conventional methods failed to show any demonstrable chemical damage to the cellulose which could be associated with processing. Linear plots for extrapolation were not obtained using the Krieble-Whitwell method. 3 tables, 3 figures, and 42 references. K.W.,Jr.

OSTERTAG, H. Cellulose decomposition by bacteria. Ergeb. Hyg. Bakteriol. Immunitätsforsch. u. Exptl. Therap. 27: 149-322 (1952). [In German; original not available in Institute library]

An extensive review of the subject is presented. 8 tables, 27 figures, and a comprehensive bibliography (p. 287-322). E.S.

WHITWELL, JOHN C., and SCHWENKER, ROBERT F., JR. Degradation of cellulose during mechanical processing. Part III. A comparison of the evaluation of viscometric methods. Textile Research J. 23, no. 3: 175-85 (March, 1953); *cf.* B.I.P.C. 22: 13-14.

Using intrinsic viscosity as an index, a significant decrease has again been

shown to occur in cotton samples that have undergone standard mechanical processing. The implication is that the size of the cellulose macromolecule has been affected by the breaking of bonds in the chains. 7 tables, 4 figures, and 15 references. K.W.,Jr.

CELLULOSE—DENSITY

NEALE, S. M., and WILLIAMSON, G. R. Specific volume of cellulose in aqueous solutions of inorganic salts. Nature 171, no. 4358: 842 (May 9, 1953).

The specific volume of cellulose (sheet viscose) in aqueous solutions of ammonium (I), sodium (II), and potassium (III) chlorides has been determined at 25°C. The curve obtained by plotting specific volume against concentration passes through a maximum at 14.3% for (I), 18% for (II), and 16% for (III). An interpretation of the results is offered which depends on the hypothesis that the polar centers introduced by the salt have a decompressing effect on the adsorbed water layer up to concentrations where the activity of the water is so reduced that it can no longer satisfy the hydration requirements of the cellulose, beyond which direct linkage of salt ions with the cellulose results in a decreased specific volume. 3 tables and 2 references. K.W.,Jr.

CELLULOSE—ION EXCHANGE

SCHÖNFELD, T., and REINHARZ, M. Ion migration in dry paper. Monatsh. Chem. 84, no. 2: 392-405 (April 15, 1953). [In German] *cf.* B.I.P.C. 22: 904.

Paper has ion-exchange properties on account of carboxyl groups present in the cellulose. By means of radioisotopes the migration of adsorbed metallic ions in dry condenser paper electrically charged has been demonstrated. At potentials of the order 10^5 volt/cm. about one third of the current is attributable to ion conduction. The activation energy has been calculated from the temperature dependence at the ionic current. The data are consonant with the interpretation of metallic ions moving between the electrostatic fields of the stationary carboxyl groups in the paper. 6 tables, 4 diagrams, and 13 footnotes. K.W.,Jr.

CELLULOSE—RADIOACTIVE EXPERIMENTS

GREATHOUSE, GLENN A. Biosynthesis of C^{14}-specifically labeled cotton cellulose. Science 117, no. 3047: 553-4 (May 22, 1953).

By introducing D-glucose-1-C^{14} into the cotton boll through the vascular system of the plant at the time of optimum sugar translocation and cellulose synthesis, 44% of the radioactive carbon was converted to cellulose and recovered (by Monier-Williams hydrolysis) in the glucose molecule; 99.97% of the activity was still in carbon 1. This indicates strongly that the glucose introduced is polymerized directly to cellulose by the enzyme system of the boll, possibly receiving the essential energy through phosphorylation. 10 references. K.W.,Jr.

CELLULOSE—SOLUBILITY

BARTUNEK, RICHARD. Reaction, swelling, and solubility of cellulose in solutions of electrolytes. Das Papier 7, no. 9/10: 153-8 (May, 1953). [In German; English and French summaries]

The behavior of cellulose in electrolytic solutions is determined by the

various structural states in these solutions (free water, ionic hydrates, dipole hydrates, water-free molecules), which cause varying degrees of swelling and solution of cellulose. Spectrophotometry should make the identification and estimation of these bonds possible and give better insight into cellulose reactions. With xanthation in mind, particular attention is paid to sodium hydroxide solutions, but potassium hydroxide, sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, perchloric acid, zinc chloride, calcium chloride, and calcium thiocyanate are also discussed. 6 figures and 10 references. K.W.,Jr.

CELLULOSE ESTERS—NITROCELLULOSE

NEWMAN, SEYMOUR, LOEB, LEOPOLD, and CONRAD, CARL M. Viscosity, sedimentation, diffusion, and osmotic behavior of long-chain nitrocellulose molecules. J. Polymer Sci. 10, no. 5: 463-87 (May, 1953). [In English; French and German summaries]

The intrinsic viscosity, sedimentation, diffusion, and osmotic properties of four long-chain unfractionated nitrocellulose polymers have been examined. Probably the most important conclusions to be drawn from a consideration of the results are as follows: Deductions based on the application of the Debye-Bueche theory (*cf.* J. Chem. Phys. 16: 573-9 [1948]), together with the high exponents in the intrinsic viscosity-molecular weight and frictional coefficient-molecular weight relations, indicate the nitrocellulose molecule in good solvents to be considerably more extended than the most ordinary polymers even at similar D.P. levels. The Debye-Bueche and Kirkwood-Riseman (*cf.* J. Chem. Phys. 16: 565-73 [1948]) theories in their present form do not satisfactorily interrelate the hydrodynamic properties of nitrocellulose over a wide range of molecular weights; sample polydispersity would probably not account for all of the discrepancies. High molecular extension on the other hand must, in part, be held responsible. The existence of a marked sheer dependence of intrinsic viscosity which increases with molecular weight is clearly affirmed, but lack of a sufficiently advanced theory for non-Newtonian behavior makes a quantitative interpretation of these results impossible. 5 tables, 13 figures, and 50 references. E.S.

CELLULOSE ETHERS

LEVEY, H. A. Ethyl cellulose . . . development and applications. Am. Paper Converter 27, no. 5: 24-5, 32 (May, 1953).

The physical properties and uses of ethylcellulose films and sheeting, the methods of manfacture and conversion, the limited number of ethylcellulose producers, and the future development and possibilities of this product are discussed. The cost of ethylcellulose is somewhat higher than that of competitive films, but mass-production exploitation of its low-cost raw materials should eventually correct this disadvantage. L.C.

STAWITZ, J. Colloid-chemical properties of water-soluble methylcelluloses. Melliand Textilber. 33, no. 7: 620-3; no. 8: 737-8 (July, August, 1952). [In German; English, French, and Spanish summaries]

The literature on the important colloid-chemical properties of water-soluble methylcelluloses is reviewed; the principles of viscometry and rheology are discussed to provide a better understanding of the properties of long-chain macromolecules. Some interesting peculiarities in the viscosity-temperature relationships of methylcelluloses are pointed out. 1 table, 7 figures, and 50 references. E.S.

TIMELL, T. E. Studies on carboxymethylcelluloses. III. The action of cold, concentrated sulfuric acid solutions on carboxymethylcelluloses. Svensk Papperstidn. 56, no. 7: 245-50 (April 15, 1953). [In English; German and Swedish summaries] *cf.* B.I.P.C. 23: 164.

3-Carboxymethylglucose was synthesized and subjected to treatment with concentrated aqueous sulfuric acid solutions at room temperature. The product remained unchanged in all cases, and it was concluded that no carboxymethyl groups were split off under these conditions. Similar experiments with a carboxymethylcellulose indicated that rapid depolymerization took place, followed by a preferential removal of low-molecular weight material which contained a higher amount of substituent groups than the remaining portion. These facts explain the results noted by Pacault, Bouttemy, and Tanaevsky (*cf.* B.I.P.C. 23: 12) and should invalidate the conclusion drawn by these authors that carboxymethylcellulose could be de-etherified by cold concentrated sulfuric acid solutions. No such removal of substituents takes place; carboxymethylcellulose behaves in this respect similar to other cellulose ethers. 4 tables, 2 diagrams, and 15 references. E.S.

CHEMICAL TESTING—BLACK LIQUOR

BETHGE, PER OLOF. A new method for determination of sulfides in sulfate black liquor. Svensk Papperstidn. 56, no. 7: 255-8 (April 15, 1953). [In English; German and Swedish summaries]

The method is based on the molybdenum blue method developed by the author (*cf.* Svensk Kem. Tid. 64, no. 5: 177-81 [1952]). The black liquor is diluted and a blue color developed by the addition of molybdate and sulfite in phosphoric acid. The solution is centrifuged and the absorbancy of the supernatant liquid is measured in the red region of the spectrum, preferably at 700 mμ (about 30 to 60 minutes after the addition of the black liquor to the reagent). The absorbancy is proportional to the sulfide content. The concentration of the sodium sulfide in grams per liter in the original black liquor is calculated from the extinction values by means of a calibration curve, the preparation of which is described. 2 figures and 2 references. E.S.

CHEMICAL TESTING—PAPER—SULFUR

GORDON, LOUIS, EICHENLAUB, R. L., and DONOFRIO, C. P. Polarographic determination of reducible sulphur in paper. Tappi 36, no. 5: 204-7 (May, 1953).

A method is described for the polarographic determination of "reducible sulfur" in paper. Hydrogen sulfide gas generated in the manner described in TAPPI method T 406 m-46 from known sulfur compounds and from paper specimens is delivered to the electrolytic cell of the polarograph. One-tenth normal solution of sodium hydroxide is employed as the supporting electrolyte in the cell. The sulfide-ion concentration is measured from polarograms obtained from the resulting solutions. The solutions prepared from known sulfur compounds are utilized for standardization purposes. The polarographic measurements were compared with the "spot tests" produced by TAPPI method T 406 m-46 from the same paper specimens; the method was found to be best adapted to sulfide solutions down to $2 \times 10^{-5} M$. 2 tables, 5 figures, and 1 reference. E.S.

CHEMICAL TESTING—SULFITE WASTE LIQUOR

GAD, GEORG, and FÜRSTENAU, EDELGARD. The determination of reducing substances (total sugar) in spent sulfite liquor. Das Papier

7, no. 7/8: 127-9 (April, 1953). [In German; English and French summaries]

Five variations of Fehling's alkaline copper oxidation method for reducing sugars were tested on samples of glucose and spent sulfite liquor. In all except procedure (I) a sample solution containing 40-50 mg. of glucose equivalent was heated in the prescribed manner with excess Fehling solution to form cuprous oxide. Method (I) was titration of the sugar solution into a measured amount of boiling Fehling solution to reduce all the cupric ions, as indicated on citric acid-potassium ferrocyanide paper, avoiding interference of cuprous oxide by spotting onto soft filter paper, placed over the test strip. In method (II) cuprous oxide was determined gravimetrically. Method (III) involved titration with 0.1 *N* potassium permanganate of a sulfuric acid solution of the cuprous oxide in ferric sulfate. Method (IV) was titration with permanganate of a phosphoric acid solution of the copper in ferric sulfate. Method (V) employed 0.1 *N* chromate to oxidize the mixture in phosphoric acid and ferric sulfate, with diphenylamine as redox indicator. Results with glucose were: (I) 75.0 mg., (II) 74.7 mg., (III) —, (IV) 75.6 mg., and (V) 75.6 mg. The spent sulfite liquor gave: (I) 58.8 mg., (II) 75.0 mg., (III) 77.0 mg., (IV) 75.6 mg., and (V) 75.6 mg. Addition of phosphoric acid or sodium pyrophosphate to the titration mixture was found to give a sharper and more stable end point. The color change with diphenylamine indicator was so sharp as to lead readily to overtitration; hence, the recommended method is (IV). Detailed directions for this procedure are given. 2 tables and 4 footnotes. L.A.B.

CHEMICAL TESTING—TALL OIL

HERRLINGER, RICHARD, and COMPEAU, GERALD M. The determination of rosin in fatty acids. J. Am. Oil Chemists' Soc. 29, no. 8: 342-4 (August, 1952).

The authors critically review older methods, particularly the McNicoll and Wolff indicator methods, which were found unreliable in the range of 0-15% rosin acids. Gravimetric methods developed in Sweden, Germany, and Finland are claimed to be more accurate than volumetric methods, but are very time-consuming. A new method is described which allows an accurate determination of rosin acids in tall oil fatty acids and the products manufactured from them over a range of 0-15%. The method is based on an acid-catalyzed selective esterification of a large sample, removal of the catalyst, titration of the unesterified rosin acids, and application of an empirical correction factor to the results. Excellent agreement is obtained between various analysts, and the rosin acids can be determined to within ±0.1%. 4 tables, 1 figure, and 14 references. E.S.

OLAVI, SVEN, and IVERMARK, RAGNAR. The determination of rosin acid in tall oil products. Svensk Papperstidn. 56, no. 7: 251-4 (April 15, 1953). [In Swedish]

A modification of the Swedish standard CCA 15(*cf.* B.I.P.C. 16: 541-2) for the determination of rosin acids in tall oil products in the range of 0-100% is described. The esterification period is extended to 10 minutes and, in the case of rosin contents above 80%, 5 ml. of benzene are added to the esterification mixture. Corrections for the nonesterified fatty acids and esterified rosin acids have been established, the application of which will permit the determination to an accuracy of 0.4%. The potentiometric-titration method gave the same results for the corrections as the indicator-titration method.

An analysis requires not quite an hour to perform. 4 tables, 3 diagrams, and 3 references. E.S.

CHLORINE

GORDON, JOSEPH. Wanted: chlorine without caustic. Chem. Eng. 60, no. 5: 187-93 (May, 1953).

In view of the growing unbalance between chlorine and caustic demands, increasing attention is being paid to processes for making the former without the latter. A technical and economic survey of the most important candidate processes and their possibilities is presented; a list of patents relating to the production of chlorine without caustic is included. 2 tables, 8 flowsheets, 1 diagram, and 6 references. E.S.

CLAY

CUTLER, IVAN B., and COOK, MELVIN A. A theory of cation exchange reactions with clay minerals. J. Am. Ceram. Soc. 36, no. 5: 165-70 (May, 1953).

A consideration of the possible cation exchange reactions with clay-mineral surfaces in aqueous media leads to an equilibrium expression with which it is possible to obtain a good correlation of data in the literature. The following conclusions were drawn: At least three equilibrium reactions are involved in base exchange, all of which must be given consideration in order to explain quantitatively the observed phenomena. These are: (*a*) an equilibrium between active and inactive sites; (*b*) an equilibrium between free and adsorbed hydrogen ions; and (*c*) the equilibrium between free and adsorbed cations other than hydrogen ions. Free energies computed from this model support it within the accuracy of the derived equilibrium constants. The weak-acid properties of clay minerals are due to the instability of the active site associated with a hydrogen ion, and/or forces other than ionic that bind the hydrogen to the active site. The concentration of negatively charged clay particles produced in water suspension by the dissociation of cations controls the ionic strength of the suspension even in salt solutions up to 0.01 *M*. 3 tables, 11 figures, and 16 references. E.S.

GREGG, S. J., and HILL, K. J. The aggregation of kaolinite. J. Appl. Chem. 3, no. 4: 169-73 (April, 1953).

A series of fractions of kaolin [smaller than 0.5, 0.5-1, 1-2.5, 2.5-5, 5-10, and 10-20μ in equivalent Stokes' diameter (E.S.D.)] separated by sedimentation have been investigated by measuring the specific surface area, S_A, by gas sorption, the heat of immersion in carbon tetrachloride, the bulk volume, V, and the apparent density in various liquids; the "percentage floating in air after five seconds," f, has also been determined by dropping down a long glass tube. The value of S_A agrees reasonably with the specific area, S_D, calculated from the E.S.D. for the 0.5, 0.5-1, and 1-2.5-μ fractions, but S_A/S_D then increases with increasing E.S.D. to nearly 4 for the 10-20-μ fraction; moreover both V (whether measured in air or *in vacuo*) and f have maximal values for the 1-2.5-μ fraction. The results point to the existence of two types of aggregate: (*a*) temporary and loose aggregates in the three smallest particle sizes, and (*b*) "booklets" in the three largest sizes. 2 tables, 3 figures, and 9 references. E.S.

COAL

WADE, CHAS. F. Efficient use of low-grade fuel. Paper-Maker (London) 125, no. 2: 112, 114 (February, 1953).

Useful directions for the efficient burning of high-ash coals are given, with emphasis on the fact that boiler firing is a highly skilled job, particularly when low grades of fuel are burned; the right type of man must be attracted to this work by financial incentives and the requirement of a certificate of proficiency. E.S.

COLOR-BLINDNESS

JORDINSON, F. Defective colour vision. J. Soc. Dyers Colourists 69, no. 3: 73-6 (March, 1953).

The mechanism of color vision in general and defective color vision in particular are described, and the following tests for abnormal color vision are discussed: the Holmgren wool test, the Eldridge-Green lantern test, the Ishihara test, the Farnsworth test, the Garner test, the Wilson test, and the Glenn Colorule. 8 references. L.C.

CONTACT ANGLE

RAY, B. ROGER, and BARTELL, F. E. Hysteresis of contact angle of water on paraffin. Effect of surface roughness and of purity of paraffin. J. Colloid Sci. 8, no. 2: 214-23 (April, 1953); *cf.* B.I.P.C. 23: 631-2.

The experimental results show that when very thin films of purified paraffin were formed in a vacuum by volatilization on smooth glass surfaces and water drops were placed upon them, the advancing and the receding contact angles were sensibly the same, i.e., 112°; hysteresis effects did not exist on these very thin and very smooth surfaces. Measurable hysteresis effects from 5 to 35° were found for less smooth films and coatings of appreciable thickness formed in a vacuum, in nitrogen, or in air, whether from a melt or by volatilization. The magnitude of the hysteresis effects appeared to be closely associated with the microscopic roughness of the surfaces, the roughness adding to the magnitude of the advancing angle but subtracting from the receding angle to the same degree, so that the average angle remained the same for paraffin films of different roughnesses but of the same degree of purification. The average contact angle for purified paraffin was slightly larger than the average angle for unpurified paraffin. 2 tables and 10 references. E.S.

COOKING PROCESS

GRANT, JULIUS. Non-conventional pulping methods. Paper-Maker (London) 125, no. 3: 210, 212, 214-15 (March, 1953); World's Paper Trade Rev. 139, Technical Convention no.: 70, 72, 74, 77 (March, 1953).

Processes for making pulp for paper manufacture by the use of nitric acid, neutral sodium sulfite, light caustic digestion followed by chlorination and bleaching, selective solvents for lignin, or combined mechanical and chemical methods are briefly described and their relative merits compared. For high yields from short-fibered plant materials the last-named type of process offers promising prospects. 10 references. E.S.

RICHTER, GEORGE A. Acid pulping with sodium sulphate liquors. Tappi 36, no. 5: 228-33 (May, 1953).

Soluble sulfates can be used as a buffer material in place of sulfite salts in acid liquors for pulping wood. Thus solutions containing 2 to 4% sodium sulfate and 8 to 10% free sulfur dioxide will delignify wood chips in much

the same manner as when the acid solution contains 1% combined sulfur dioxide. Many cases are cited to show the parallel behavior of these two types of liquor when used under a variety of conditions. Other sulfates than sodium have interesting possibilities. 14 tables and 3 figures. E.S.

CORROSION

BAISCH, S. J. Experiences with field-applied Inconel digester linings. Tappi 36, no. 5: 221-5 (May, 1953).

An experimental attempt was made to solve the digester-corrosion problem by field lining a digester with ⅛-in. thick Inconel strip. The experiment was later expanded to include two digesters of the tumbling type. This report deals with the experiences with the one vessel having 2.5 years of lining service and the other a little over one year. The results show that excessive cracking occurred in the welds adjacent to the Inconel strip, and that a scale formation took place between the lining and the carbon steel backing of the digester. It was believed that an excessive temperature differential occurred between the liner and the steel, and a method for measuring the temperature behind the liner in the carbon-steel backing and outside of the carbon-steel shell with the aid of pencil-type thermocouples was developed. In general, the alloy Inconel has shown excellent corrosive resistance to alkaline pulping liquors, but further consideration must be given to a welding procedure to seal the liner to the carbon-steel shell of the digester. 8 figures and 3 references. E.S.

GUBA, F. A. Corrosion in the pulp and paper industry. Tappi 36, no. 5: 134-7A (May, 1953).

Following a brief description of the kinds and types of corrosion (I), the range of stainless steels (II) to combat (I) is discussed, with particular reference to conditions in the pulp and paper industry. A chart listing the comparative costs of the different (II) is included which indicates that cost and corrosion resistance are closely interwoven. 1 figure and 3 tables. E.S.

COST—ACCOUNTING

ELLIOTT, NORMAN J. Pricing and estimating. Article 9. Estimating corrugated box costs. Boxboard Containers 71, no. 725: 40-2 (May, 1953); *cf.* B.I.P.C. 23: 632.

The estimation of the cost of materials used in the manufacture of corrugated boxes is a complicated process. The author describes the basic considerations which must be made in estimating the cost of the corrugating medium, the liner, and the adhesive. He recommends that standard costs per 1000 sq. ft. of board for each of the various board strengths and flutes be established; with the addition of a waste allowance factor, these standard material costs can be assembled in chart form and readily consulted when an order is received. The labor and overhead costs which apply to a specific order must be computed with due consideration for plant practices, machine capacities, and alternative methods of production. Selling, delivery, and administrative costs are part of the final estimate. It is wise to accumulate information on the total cost of repeat items, so that each order for such standard products does not require separate estimating. However, the author warns that this standard information should be kept up-to-date by comparison with actual costs, and that such tables must not be used to estimate specialty jobs. 2 tables and 1 illustration of an estimating form. L.C.

FUSSELL, H. E. Costing steam and power in a boardmill. World's

Paper Trade Rev. 139, no. 13: 958, 960, 962, 964, 969-70, 972 (March 26, 1953).

The need for the correct allocation of steam and power costs in a board mill is emphasized, and a cost-accounting system which has provided useful and practical results at the mill of the St. Anne Board Mill Co., Ltd. is outlined in some detail. 2 tables and 1 figure. E.S.

DE-INKING

THOMPSON, JAMES O., SWANSON, JOHN W., and SEARS, GEORGE R. The separation of solids in deinking waste by coagulation and filtrafion. Tappi 36, no. 5: 207-10 (May, 1953).

Laboratory experiments directed toward the elucidation of the principal variables influencing the coagulation and filtration of the solids in deinking waste are described. The reduction of the solids content by simple settling or by lime coagulation followed by settling is of practical interest, and laboratory data obtained by these methods with a series of representative effluent samples are presented. Lime coagulation in general was more effective than was simple settling, though in some cases the advantage was slight. The variability of the effluent from day to day with respect to settling and coagulation was pronounced. 4 tables and 8 references. E.S.

TRENSCHEL, RUDOLF. Regeneration and deinking of waste paper. Das Papier 7, no. 7/8: 113-19 (April, 1953). [In German; English and French summaries] *cf.* B.I.P.C. 21: 808.

Recent American developments in the regeneration of waste paper are reviewed, as studied by the author during a trip in the spring of 1952. The complete absence of kollergangs is noted; either breaker beaters or Hydrapulpers are used for the initial disintegration. A waste-paper regeneration system built by the Black-Clawson Co., Hamilton, Ohio (including a Hydrapulper, ragger and junk remover, Hydraclone, Classifiner, disintegrator, and Selectrap) is described. Reference is made to a similar system installed in the German Papierfabrik Jagenberg according to the American model; tabular data on power consumption and manpower requirements are included. The efficient operation of this plant permitted the reduction from the daily three to two shifts. In the final section of the article, three modern deinking plants and their equipment are described—i.e., those of the Bergstrom Paper Co., Neenah, Wis.; the Mead Corp., Chillicothe, Ohio; and the Kalamazoo Paper Co., Kalamazoo, Mich. In conclusion, the advantages of wet regeneration with Hydrapulpers are emphasized, and the gradual introduction of this type of equipment by German mills is mentioned. The high initial cost of the complete deinking processes will probably deter their adoption under German conditions in the near future. 1 table and 19 figures. E.S.

DYES AND DYEING

IMPERIAL CHEMICAL INDUSTRIES, LTD. *Dyestuffs Division, Manchester, England.* Some variables in paper dyeing. World's Paper Trade Rev. 139, no. 9: 668, 670, 672 (Feb. 26, 1953).

The effect of a number of variables—i.e., furnish, degree of sizing, order of addition of dyestuff and sizing materials, beating, and filler addition—on the application of basic, acid, and direct dyestuffs, and pigments is discussed briefly. E.S.

ECONOMICS, INDUSTRIAL

LINDAHL, ERIK. Stable currency and full employment. Svensk Papperstidn. 56, no. 8: 279-83 (April 30, 1953). [In Swedish]

The author discusses the possibilities of a stable currency with simultaneous full employment under the economic conditions existing in Sweden. E.S.

EDUCATION

ANON. Strides in technical education. Indian Pulp and Paper 7, no. 9: 446-8 (March, 1953).

The problems of technical education in India are reviewed; one serious difficulty has been the variation of the standards of instruction in technical subjects from region to region and institution to institution. Recent developments for improving the standards, research scholarships, and practical training facilities are discussed. E.S.

EUCALYPTUS

STEWART, C. M., and FOSTER, D. H. Identification of 4-methyl-D-glucuronic acid in *Eucalyptus regnans* wood. Nature 171, no. 4357: 792 (May 2, 1953).

Hydrolyses of the wood with sulfuric acid yielded an aldobiuronic acid (I) which, when treated with methanolic hydrogen chloride, gave the 4-methyl methyl-D-glucuronisides, suitably identified by conversion into the corresponding α- and β-amides. Presumably, (I) is a 4-methylglucuronosyl D-xylose which yields 4-methyl-D-glucuronic acid on hydrolysis. This acid is identical with that obtained from aspenwood and mesquite gum. 10 references. L.E.W.

FEED WATER

RALPH, J. E. G. Some experiences with dissolved oxygen in boiler water. World's Paper Trade Rev. 139, no. 5: 334, 336, 338, 343-5 (Jan. 29, 1953).

In modern boiler operation, the attack of the boiler parts, particularly the economizer tubes, by the oxygen dissolved in the feed water has become more acute. Details of a simple method for comparing the action of different feed waters on the metals of the economizer tubes are given. Physical and chemical deaeration is discussed, and certain comparisons are made. Experimental results of the use of sodium sulfite, alone and with a catalyst, and of sodium chromate are given. The possibilities of efficient mechanical deaeration and the use of sodium sulfite to deal with the residual oxygen are demonstrated. 4 tables and 6 figures. E.S.

FERMENTATION PROCESS

NAUCLÉR, BENGT. Acetone and butanol from pre-hydrolyzates. Uddeholmaren, Special English Ed.: 13-15 (January-June, 1953). [In English]

The author provides a brief nontechnical discussion of the principles involved in the production of acetone and butanol from prehydrolyzate wood sugars in the sulfate process for the manufacture of dissolving pulp. Work initiated by Lundin at the Royal Institute of Technology, Stockholm has been continued in the Uddeholm laboratories at Skoghall to provide a laboratory basis for process development. The article is of particular interest to the pulp and paper and the fermentation industries in that it indicates advanced

stages of planning for one of the first published proposals for the fermentative utilization of the large wood-sugar potentials of the kraft or sulfate process of pulping wood. 11 figures. A.J.W.

FIBER—STRUCTURE

COTTRALL, L. G. Fibrillae. World's Paper Trade Rev. 139, no. 5: 346, 348 (Jan. 29, 1953).

In the light of the modern knowledge of fiber structure, the older use of the term "fibrillae" to denote longitudinal subdivision of the fibers brought about by beating into threads (used in preference to the term "strings") is considered justifiable and rational. Fibrillae consist of bundles of ultimate cellulose threads down to one single cellulose thread; a single cellulose thread is the ultimate minimum limit of a fibril. If these cellulose threads were further subdivided, the material would go into solution; no mechanical treatment is known which will produce this effect. This explanation is given in answer to an inquiry. E.S.

KLING, W., and MAHL, H. The morphology of the cotton fiber. IV. Summary of the results to produce a new improved model of the fiber. Melliand Textilber. 33, no. 9: 829-32 (September, 1952). [In German; English, French, and Spanish summaries] *cf.* B.I.P.C. 23: 97.

The results of electron-microscopic investigations of cotton are summarized to develop a new model of the fiber. The primary cell wall consists of a wax-pectin layer in which at least two network systems of cellulose fibrils are embedded. The outer network is longitudinal, whereas the inner one has a transverse orientation. The secondary wall consists essentially of parallel cellulosic fibrils. These are grouped in bundles which, in turn, are united to rope- or band-shaped structures. It was not possible to find evidence of a strictly laminar structure of the ripe unswollen fiber. The well-known spiral arrangement of the cotton fiber was confirmed both in the fibril network of the primary wall and in the fibril bundles of the secondary wall. Detailed schematic drawings of the arrangements in the fiber are given. 6 figures and 20 references. E.S.

FIBER—SURFACE AREA

FORZIATI, FLORENCE H., BROWNELL, ROBERT M., and HUNT, CHARLES M. Surface areas of cottons and modified cottons before and after swelling as determined by nitrogen sorption. J. Research Natl. Bur. Standards 50, no. 3: 139-45 (March, 1953).

Surface areas of cottons which differed in variety and maturity and cottons which have been subjected to various physical and chemical treatments were measured before and after swelling. Swollen cottons were prepared by immersing air-dried cottons in water at room temperature for 24 hours, displacing the water with methanol and the methanol with pentane, and finally drying the fibers. Surface areas were calculated from the quantity of nitrogen adsorbed at −195.8°C. The specific surfaces of unswollen fibers were less than one sq. m./gram; those of the swollen fibers ranged from 4 to 148 sq. m./gram. Purification and mercerization produced increases in the surface available after swelling occurred; in the later stages, an increase occurred. Although surface-area measurements were probably in no instance made on completely swollen fiber, the procedure employed is believed to be useful in evaluating the effects of various treatments on

cottons and other cellulose fibers. 12 tables, 2 figures, and 22 references. E.S.

FILES AND FILING

ANON. Filing the paper sample. Paper Making and Paper Selling 71, no. 4: 7 (Winter, 1952-53).

An efficient method of collating and classifying paper samples for reference purposes is described. L.C.

FINANCE

PAPER MILL NEWS. Annual reports of paper mills. Paper Mill News 76, no. 16: 118, 120-2 (April 18, 1953).

The annual financial and operational reports of 23 paper mills are given. L.C.

FIRE PREVENTION

THOMSON, A. G. Fire prevention in paper mills. World's Paper Trade Rev. 139, no. 11: 787-8 (March 12, 1953).

Modern fire-fighting means, including carbon dioxide dry-chemical fire extinguishers for highly inflammable materials, fire-fighting staffs, and the need for good housekeeping are reviewed. E.S.

FLUID DYNAMICS

BARON, THOMAS, and OPPENHEIM, A. K. Fluid dynamics. Ind. Eng. Chem. 45, no. 5: 941-51 (May, 1953); *cf.* B.I.P.C. 23: 406.

The authors review the recent literature on the major trends in research on the various types of flow. 2 figures and 289 references. E.S.

SITTIG, MARSHALL. Fluidized solids. Chem. Eng. 60, no. 5: 219-31 (May, 1953).

The present status of the knowledge of fluidization and present and potential applications are surveyed. The roasting of pyrites to sulfur dioxide and the purification of sulfur dioxide from sulfur trioxide are listed as techniques of interest to the pulp and paper industry; the former is already in commercial operation. 4 tables and 16 figures. E.S.

FOAM

SPORCK, C. R. Some factors influencing foam stability. J. Am. Oil Chemists' Soc. 30, no. 5: 190-3 (May, 1953).

It is believed that liquid films owe their stability to the Gibbs elasticity. The origin of this elasticity is discussed, and it is concluded that in some cases a nonequilibrium value may be the important concern. Some data on surface composition from radiochemical experiments and foam fractionation are presented. Finally, an explanation of the origin of the slow- and fast-draining films of Ross, Miles, and Shedlovsky (*cf.* J. Am. Oil Chemists' Soc. 27: 268-73 [1950]) is offered. 1 table, 1 figure, and 5 references. E.S.

FOREST FIRES

JONES, T. S. Forest fire prevention education: woods industry's program in Northwestern Ontario. Pulp Paper Mag. Can. 54, no. 5: 164, 167-8, 170 (April, 1953).

The fire-prevention education program of the Thunder Bay Timber Operators' Association is described; it represents an effort to educate woods workers in fire prevention and to prove to the general public that tourists rather than workers are responsible for summer forest fires. Pamphlets, posters, fire bulletins, and films were distributed in 1952. Research into the causes and types of fires was carried out by means of questionnaires. 5 tables. L.C.

FORESTS AND FORESTRY

CANADIAN PULP AND PAPER INDUSTRY. Report on the Canadian pulp and paper industry forestry division. Can. Pulp Paper Ind. 6, no. 4: 84, 86, 88, 90, 92, 94, 96, 98, 170 (April, 1953).

The various facets of the forestry program of Canada's provinces (with the exception of Alberta) are discussed in the following sections: Improved utilization is key in Maritimes, p. 84; Newfoundland seeks capital investment, p. 86; Manitoba pulp industry sponsors research, p. 88; Quebec mills sponsor extension forestry projects, p. 90, 92; Ontario extends utilization of species, p. 92, 94; Saskatchewan shows active interest in future pulp industry, p. 94, 96, 98; BC's forest management still has growing pains, p. 98, 170. 3 tables and 4 illustrations in the article as a whole. L.C.

LESLIE, A. P. Direct seeding as a means of reforestation. Pulp Paper Mag. Can. 54, no. 5: 180, 183-4, 186, 188 (April, 1953).

The author reviews the results of research into the economic feasibility of direct seeding as a means of reforestation and the recognizable factors of success revealed in the literature. The results of direct seeding in Ontario are also discussed. 4 tables and 83 references. L.C.

THUNELL, BERTIL. The structure and productivity of the Swedish forest-products industries. Holz Roh- u. Werkstoff 10, no. 12: 451-6 (December, 1952). [In German]

Statistical data on forest ownership, value of products, productivity per worker, raw-materials balance, value of mechanical and chemical wood conversion, and cost, wages, and prices in the Swedish forest-products industries are presented. 6 tables and 11 figures. E.S.

FORESTS AND FORESTRY—EDUCATION

HARRISON, F. A. Industry encouragement to woodlot management. Can. Pulp Paper Ind. 6, no. 4: 52, 54, 56, 58, 60 (April, 1953).

Because the paper industry and other wood users have learned to use a variety of woods, the small woodlot has become an important source of raw material. It is to industry's advantage to encourage and instruct the woodlot owner in the best silvicultural methods. The Hawkesbury and Grenville, Quebec programs are described as examples of industrial encouragement of private tree crops. L.C.

FUEL

EDLING, GUSTAF. Can a pulp mill be made self-supporting in fuel? Paper Trade J. 136, no. 15: 14-18 (April 10, 1953); Das Papier 7, no. 9/10: 159-64 (May, 1953). [In English and German; the second reference with English and French summaries] *cf.* B.I.P.C. 23: 328-9.

An English and German translation, respectively, of the original Swedish article are presented. 6 tables and 3 figures in each. E.S.

HEAT

ECKERT, E. R. G. Heat transfer. Ind. Eng. Chem. 45, no. 5: 951-6 (May, 1953); *cf.* B.I.P.C. 22: 406.

Important papers published during 1951 and 1952 are reviewed and discussed. 182 references. E.S.

HISTORY

ANON. An 1847 paper machine. Paper-Maker (London) 125, no. 2: 90-1 (February, 1953).

A contemporary drawing of an 1847 paper machine operating at John Tod & Son, Ltd.'s mill at Lasswade, Edinburgh, is presented; the drawing was prepared by the grandfather (John Tod) of the present owner when 14 years of age. It may be concluded that the machine was one of the first installed in Scotland. Excerpts from the diary of the youth are given when he was taken to the Great Exhibition in London in 1851. 1 illustration. E.S.

BARKER, ERNEST F. A vanished paper mill: The Stratford. Tappi 36, no. 5: 98A, 100A (May, 1953).

The fate of an old paper mill at Stratford, Delaware County, Ohio is recorded. The mill started as a grist mill in 1808; the first mention of it as a papermaking establishment dates from 1832. Around 1900 it closed permanently, the two paper machines were sold and in 1902, the buildings were converted to a carbarn and repair shop. On Dec. 27, 1927, the entire property burned down and was never rebuilt. E.S.

GACHET, HENRI. Origin of paper manufacture and ancient papermaking processes. China. Papetier 7, no. 4: 38-9 (April, 1953). [In French]

A brief historical discussion on the inventor of paper in China and the almost religious, respectful attitude of the Chinese toward paper is presented. 1 illustration. E.S.

VAILLÉ, EUGÈNE. The clay letters of primitive civilizations of the Near East. Papetier 7, no. 3: 41-3 (March, 1953). [In French]

Letters written upon clay tablets of Assyrian-Babylonian origin and their contents are discussed and illustrated. 6 figures and 7 footnotes. E.S.

WHITELEY, WILLIAM. The British paper trade during the centuries. Paper-Maker (London) 125, no. 4: 310, 312 (April, 1953); World's Paper Trade Rev. 139, no. 14: 1025-6 (April 2, 1953).

A few historical facts in connection with the British paper industry during its 462 years of progress are given, with particular reference to the times when queens have ruled over Great Britain. Shortage of raw materials and bitter competition at times have been the recurrent problems of the industry. E.S.

INSTRUMENTATION

HAYWARD, F. W. Value of instrumentation to the paper industry.

World's Paper Trade Rev. 139, Technical Convention no.: 46, 48, 50 (March, 1953).

In considering the application of instruments to papermaking processes for making a better and more uniform product, the advantages of recording instruments over indicating instruments are discussed. The specific applications dealt with are: control of chest stock levels; stock consistency and pH; wire, couch, and press suction box vacuum; pneumatic loading of presses; drying cylinder temperature; and basis weight of paper, coating, and impregnation. The value of instrumentation for greater industrial efficiency depends on correct installation and adequate maintenance. Such instrument application can only be developed satisfactorily on the plant and, to accomplish this, close co-operation between the instrument and papermaking industries is essential. E.S.

GEORGE KENT LTD., *Luton, England.* Automatic boiler control for the paper industry. World's Paper Trade Rev. 139, no. 17: 1271-2, 1274 (April 23, 1953).

The instrumentation and air-operated automatic boiler control of the steam-power plant at the Aylesford mill of Albert E. Reed and Co., its mode of operation, and advantages are described. Many other possibilities for the application of instrumentation and frequently also automatic control exist in the processing of pulp and paper. 3 illustrations. E.S.

WALTER, LEO. Aspects of instrumentation. Indian Pulp and Paper 7, no. 6: 303-8 (December, 1952).

The author discusses the basic principles of instrumentation, the conditions under which indicators and recorders are required, and those where measuring instruments are sufficient and where automatic control is essential. 5 figures and 10 references. E.S.

INTERIOR PACKING

ANZENHOFER, RUDOLF. Cushioning of pressure- and impact-sensitive goods made more economical. Verpackungs Rundschau no. 2: 60-2 (February, 1953). [In German]

A new cushioning material "Polsterpack," a paper hose filled with wood wool, and shipping applications are described; it is particularly suitable for the protective packaging of furniture. 5 illustrations. E.S.

HEYWOOD-WAKEFIELD COMPANY, *Gardner, Mass.* Broken mirror bad luck so package was changed. Packaging Parade 21, no. 244: 110-11 (May, 1953).

An improved method of packaging framed mirrors employs four long narrow pieces of double-faced honeycomb board with lengthwise slit scores which fit over all four edges of the mirror's frame. The assembly is slid into a corrugated box and is ready for shipment. The honeycomb maintains a one-inch space between the inside surface of the box and all parts of the mirror. 2 illustrations. E.S.

MASEL, MARVIN. A mathematical approach to cushioning. Modern Packaging 26, no. 9: 133-5, 193-4 (May, 1953); *cf.* B.I.P.C. 16: 305.

Equations are developed and applied to the design of the correct cushion

for a fragile article when dropped from various heights. 2 tables, 3 figures, and 9 references. E.S.

THE THRISSELL ENGINEERING COMPANY, LTD., *Bristol, England.* Built-up (concertina) pads. Fibre Containers 38, no. 4: 60, 62 (April, 1953).

Machine-made, built-up corrugated pads for internal packing (concertina or pleated type) and the machinery used in their manufacture are described. Double-wall corrugated board is slit and trimmed on one machine and automatically passed to another for folding and gluing; the combination produces about 6000 pads/hour. 4 figures. L.C.

LIGNIN

DHINGRA, D. R., BHATNAGAR, M. S., and NIGAM, P. C. Lignin recovery from soda black liquor. Indian Pulp and Paper 7, no. 6: 311-15 (December, 1952).

The authors investigated the optimum conditions of lignin recovery from soda black liquor, using carbon dioxide as the precipitant. Based on the results of their experimental data, they found that the best temperature for maximum lignin precipitation is 80°C., the most suitable specific gravity of the black liquor about 1.1, and the period of passing carbon dioxide through the solution about six hours. The pH of the partially neutralized liquor is about 7.5. 8 tables, 3 diagrams, and 11 references. E.S.

ENKVIST, TERJE, and ALFREDSSON, BO. Low molecular substances of lignin origin in black liquors from sulphate and soda pulping of spruce wood. Tappi 36, no. 5: 211-16 (May, 1953); *cf.* B.I.P.C. 23: 253-4.

With ordinary soda and sulfate digestions of sprucewood lignin about 6% of the wood is degraded into substances which cannot be precipitated by adding mineral acids to the black liquor. This loss of lignin consists of three parts, each comprising about 2% of the wood: (1) the fraction already dissolved from the wood at about 100°C. (the methoxyl content is low and the ultraviolet-absorption spectrum different from the spectrum of lignin); (2) lignin destroyed to nonaromatic substances; and (3) degradation products of lignin obtained mostly at the maximum temperature of the digestion (160-180°). The main part of this fraction seems to be composed of derivatives of dimers of the phenylpropane units of lignin, in addition to small amounts of vanillic acid and simple methoxy ketones such as acetoguaiacone. Through heating isolated soda or sulfate lignin with sodium hydroxide solution at about 170°, approximately 7 to 26% of the lignin can be degraded to a product which is almost identical with part (3) named above. With a two-step sulfate digestion at 100 and 167° and a subsequent heating of the obtained sulfate lignins with alkali, about 35% of the lignin of sprucewood was converted into products soluble in ethyl ether. The mechanism of this reaction is discussed. 2 tables, 8 figures, and 13 references. E.S.

MARSHALL, H. BORDEN. The challenge of lignin. Pulp Paper Mag. Can. 54, no. 5: 112-15 (April, 1953).

The author discusses the need for further fundamental information on lignin and describes a few special problems, including an authentic structural formula and better utilization of spent sulfite-liquor values. E.S.

STEVENS, GEORGE DE, and NORD, F. F. Investigations on lignin

and lignification. XII. A study of lignin formation based on the oxidation of native and enzymatically liberated lignins. Proc. Natl. Acad. Sci. U. S. 39, no. 2: 80-4 (February, 1953); *cf.* B.I.P.C. 23: 488, 641.

A number of native and enzymatically liberated lignins were oxidized with nitrobenzene and alkali and analyzed by means of paper partition chromatography for aldehydes. White Scots pine, birch, and bagasse yielded *p*-hydroxybenzaldehyde (I) in addition to other aldehydes. The finding of (I) on oxidation of Scots pine lignin lead the authors to the conclusion that either coniferyl alcohol (II) is not the only lignin progenitor in woody tissues, or that (II) is preceded in the process of lignification by a simpler, less substituted aromatic system which in turn is formed from carbohydrates (III). Previous finding of methyl-*p*-methoxycinnamate from the action of *Lentinus lepideus* on (III) indicates that methyl-*p*-hydroxycinnamate is the primary metabolic product of the fungus. Thus, the authors propose the following mechanism of lignification. (III) are enzymatically transformed via a C_2 fragment to a *p*-hydroxyphenylpropane unit which in turn can undergo methoxylation to give a guaiacyl unit. These two aromatic building stones in turn could form lignin by repeated condensations. Methylation of Scots pine lignins indicated the absence of enolizable carbonyl groups. 2 tables and 24 footnotes. I.A.P.

THIELE, HEINRICH, and KETTNER, HELMUT. Humic acids. Kolloid-Z. 130, no. 3: 131-60 (March, 1953). [In German]

An extensive study on the preparation of humic acids from different substances (including Willstätter lignin, p. 137), their biological formation, and their chemical constitution is presented. The authors consider humic acids polymer colloids and not chemically homogeneous substances. 13 tables, 15 figures, and 47 references. E.S.

TRAYNARD, PH., AYROUD, A. M., and EYMERY, A. The existence of a lignin-carbohydrate union in wood. Assoc. tech. ind. papetière, Bull. no. 2: 45-52 (1953). [In French] *cf.* B.I.P.C. 23: 502.

A review is given of arguments in favor of and opposed to the existence of a lignin-carbohydrate complex (I) in wood. By extracting poplarwood (II) with aqueous acid at pH ranging from 4.15 to 2.2, the over-all wood losses ranged from 23.8 to 34%, the lignin (III) losses from 10.3 to 13.1% of the total (III) in (I), and the pentosan (IV) losses varied from 66.7 to 83.7% of (IV) initially present in (I). In all cases the ratio of the loss of (IV) : loss of (III) remained practically constant (6.39-6.47). (II) heated eight hours at 140°C. lost 16-18%; the resulting aqueous solution was heated with 0.75 *N* sulfuric acid, and at definite intervals any precipitate that was formed was filtered and analyzed (for carbon, hydrogen, and methoxyl), and the reducing values of the corresponding solutions were determined. The initial precipitate (formed after six hours) appears to be a "normal" (III) (containing 63.1% carbon, 5.7% hydrogen, and 17.5% methoxyl); the reducing value of the filtered solution was then at its highest, i.e., 22.1 g. copper oxide per 100 g. of (I). Thereafter the reducing value drops markedly, as do the methoxyl and carbon contents of the precipitates. These results are discussed without reaching any conclusion regarding the existence of a soluble (I). (II) was chlorinated in an anhydrous medium (carbon tetrachloride?), and the product extracted successively with cold and hot ethanol; each extract was fractionated by a series of treatments outlined in an elaborate flowchart. Each fraction, when subjected to paper-partition chro-

matography, failed to show the presence of free saccharides unless prehydrolyzed with *N* hydrochloric acid. In a second series, (II) was heated at 140° in an autoclave with ethanol containing small amounts of hydrochloric acid. The extract, concentrated *in vacuo*, was then subjected to a series of fractional precipitations (and solutions) which are outlined in a suitable flowchart. A water-soluble fraction, evaporated and dried, extracted with acetone, followed by acetylation, yielded a benzene-soluble portion from which two fractions were obtained; neither of these showed the presence of sugars until hydrolyzed with *N* hydrochloric acid. The data are presented as experimental evidence that in (II) (I) actually exists. 5 tables, 5 figures, and 29 references. L.E.W.

LIGNIN—ABSORPTION SPECTRA

AULIN-ERDTMAN, GUNHILD. Spectrographic contributions to lignin chemistry. IV. A method for the elucidation and estimation of phenolic elements. Svensk Papperstidn. 56, no. 8: 287-91 (April 30, 1953). [In English] *cf.* B.I.P.C. 23: 557.

A spectrochemical method has been developed for determining the structural type and the approximate amount of phenolic elements present in complex soluble materials. The extinction curves are determined for an acid-neutral and an alkaline solution, containing equal concentrations of the preparation to be investigated. One curve, a "ΔD-curve," is constructed by plotting the difference in extinction of the two solutions, against the wavelengths. The structural type of the phenolic constituent is deduced from the type of the curve obtained, by comparison with change in extinction curves, "Δε-curves," similarly constructed for model phenols. The values of optical density, ΔD, relative to the change in extinction, Δε-values, of the actual phenol at the same wavelengths is a measure of the amount of the phenolic constituent present in the solutions. Various sources of errors are discussed. "Δε-curves" are given for 15 model phenols used in an investigation of lignin preparations and similar products. 1 table, 3 figures, and 3 references. R.C.R.

LIGNIN—RADIOACTIVE EXPERIMENTS

KRATZL, K., and BILLEK, G. The synthesis of coniferin tagged with C^{14}. Monatsh. Chem. 84, no. 2: 406-14 (April 15, 1953). [In German]

Coniferin (I) labeled at the carbon atom 2 of the side chain with C^{14} was synthesized for a study of the biogenesis of lignin. (I) has been synthesized by three different procedures, but only the following was used for the radioactive compound: tetraacetylglucovanillin is condensed in pyridine with malonic acid labeled C^{14} at the methylene carbon atom, giving tetraacetylglucoferulic acid (II) tagged C^{14} at the carbon atom 2 of the side chain. (II) is converted into the acid chloride, and the latter is reduced to coniferin acetate (III) with lithium aluminum hydride. Saponification of (III) with sodium in methanol gives (I) with 7.5×10^4 impulses/minute/mg. Syringin is synthesized in a similar way. 19 references. F.E.B.

MACHINERY

ANON. Manufacture of pulp and paper mill machinery in Finland. Indian Pulp and Paper 7, no. 7: 364-6 (January, 1953).

A condensed review of the diversified machinery for the woodworking, pulp and paper, and board industries produced in Finland is given; a brief

reference to its central export organization, called METEX, is made. 3 illustrations. E.S.

PAPER BOX AND BAG MAKER. Annual review of machinery. Paper Box Bag Maker: 25-6, 28, 30, 32, 34-45 (Annual no., 1953); *cf.* B.I.P.C. 22: 583.

A review of new machinery in the converting field for paper and board is presented. 28 illustrations. E.S.

MACHINERY—CARTON-FEEDING MECHANISM

HIGH PRODUCTION MACHINE COMPANY, INC., *Philadelphia.* Device converts wrapper to "semi-auto" operation. Boxboard Containers 71, no. 725: 26-8 (May, 1953).

The company has developed a semiautomatic feeding assembly which can be adapted to any setup-paperbox wrapping machine. The device, called Adapto-Feed, consists of a conveyer assembly and belt, an automatic feeding assembly, blower equipment, rubber drive rolls for the gluer, and nylon brush rolls for the wrapper. Requiring only semiskilled or unskilled operators, Adapto-Feed is reputed to turn out more boxes per hour than a skilled hand-feeder can. It is easy to install and to adjust for different box sizes. 6 illustrations. L.C.

MACHINERY—CONSISTENCY REGULATORS

ANON. De Zurik consistency regulators. Papeterie 75, no. 4: 263, 265, 268-9, 271 (April, 1953). [In French] *cf.* B.I.P.C. 22: 180.

Air instrumentation-type consistency regulators for different applications are described. 8 illustrations. E.S.

MACHINERY—CONVERTING MACHINERY

EGAN, FRANK W. Laminators. Tappi 36, no. 5: 141-2A (May, 1953).

The author discusses constructional details of a suitable laminator for general use, with particular reference to the three major factors in proper laminating—i.e., web tension, moisture retention, and bonding. E.S.

MACHINERY—CORRUGATING MACHINE

BOGGIO, M. P. Advantages of hard chrome plating in the corrugator field. Tappi 36, no. 5: 170-1A (May, 1953); Fibre Containers 38, no. 3: 73-4 (March, 1953). [Abridgment]

The author discusses the correct time for replating corrugator equipment and the importance of a competent company to do the job. E.S.

WERNER, A. W. Contemporary flute design. Tappi 36, no. 5: 167-70A (May, 1953); Fibre Containers 38, no. 3: 64, 66, 68 (March, 1953). [Abridgment]

Following a fundamental discussion of flute contours, the author describes a new tooth form or contour with considerable clearance on the flanks for corrugating rollers developed by S&S Corrugated Paper Machinery Co. The advantages of ample clearances in contour design on the reduction of varia-

tions in flute height (high and low flutes), the improvement in flat-crush test values, and the maintenance of more uniform board caliper are discussed. It is emphasized that greater clearances cannot contribute to leaning corrugations, but that they rather improve this condition. Rolls with the new contour will successfully handle varying thicknesses of corrugating medium (i.e., heavier than ninepoint); they can be run "as cut" or be chromium plated after machining without changing the tooth form to accommodate the plating. 9 and 10 figures, respectively. E.S.

WERNER, A. W. Corrugating roll life. Tappi 36, no. 5: 171-4A; discussion: 174-5A (May, 1953); Fibre Containers 38, no. 3: 68, 73; discussion: 74, 76 (March, 1953).

The life of steel corrugating rollers presents a metallurgical as well as a papermaking problem. The presence of fine sand and glasslike particles—which seems impossible to eliminate—gives an abrasive quality to the paper which tends to wear down the crown of the rollers and the height and diameter of the flutes. The metallurgical aspect is concerned with the application of appropriate constructional materials which will resist such abrasion. Additional reasons for rapid roll wear are higher machine speeds, differences in flute height between mating rolls, and roll pressures. The great advantage of chromium-plater rolls lies in the fact that they are replated when the chromium coating is almost removed by the abrasive quality of the paper. A new process of flame-plated tungsten carbide is being introduced claimed to outwear chrome plating about 20:1; however, no definite records are yet available. To record the results of corrugating rollers in use, the author recommends the accurate measurement of roll diameters and flute heights before installation and after regular operating periods; very few records of this type are at present available for comparative results. 1 table and 3 figures. E.S.

MACHINERY—CURLATOR

GAVELIN, GUNNAR. The present applications of the Curlator. Svensk Papperstidn. 56, no. 8: 304-5 (April 30, 1953). [In Swedish]

The construction, mode of operation, and applications of the Curlator are described. The appearance of the Centri-Cleaner on the market may somewhat limit the field of the Curlator, although the development of a combination of a Curlator with Centri-Cleaners seems quite possible. The most interesting present use of the Curlator is the treatment of strong newsprint sulfite. E.S.

MACHINERY—CUTTERS

ANON. The A B C of papers and boards. Papetier 7, no. 4: 44, 46 (April, 1953). [In French] *cf.* B.I.P.C. 23: 193.

This section of a series of articles deals principally with methods of cutting paper either in sheet form or rolls. E.S.

MACHINERY—DRYERS

WALTER, LEO. Fundamental factors influencing thermostatic control of cylinder temperatures of the drying section of Fourdrinier machines. Can. Pulp Paper Ind. 6, no. 5: 11-14, 30 (May, 1953).

The author surveys briefly the basic considerations of various methods

developed for measuring and controlling the surface temperature of drying cylinders; a few practical control installations are described and illustrated. 7 figures. E.S.

MACHINERY—ELECTRIC EQUIPMENT

LANGENWALTER, D. F. Protection for an industrial plant connected to a utility system with reclosing breakers. Tappi 36, no. 5: 199-203 (May, 1953).

The paper serves as an introduction to the topic of relaying the tie between the industrial plant and the utility. This topic is becoming more and more important as utilities and paper mills establish electrical ties for greater continuity of service. The electrical operating problems associated with such tie operation are described and proper relaying is suggested for various operating conditions. Protection is necessary to avoid loss of production and to prevent damage to motors and generators. The reclosing speeds of breakers and the various types of relays for sensing electrical disturbances are discussed. 1 table, 9 figures, and 6 references. E.S.

MACHINERY—FELTS

COLLINS, R. Paper makers' felts. World's Paper Trade Rev. 139, Technical Convention no.: 78, 80, 82, 84 (March, 1953).

Postwar developments in the manufacture of papermakers' felts include the use of synthetic fibers and the resin treatment of felts. The limitations of certain types of felts are indicated; the improvements made with all-wool felts are discussed by showing that the weave and weight, as well as the satisfactory fitting of the felt to the machine, play a tremendous part in the ultimate results. In conclusion, the tanning of felts to resist the action of bacteria and to eliminate shrinkage is mentioned. 4 figures. E.S.

MACHINERY—KNIVES

LUKE AND SPENCER LTD., *Altrincham, Cheshire, England.* New principle in guillotine knife grinding. World's Paper Trade Rev. 139, no. 8: 581 (Feb. 19, 1953).

An improved automatic knife grinder, Type AKG, a highly sensitive precision-grinding machine for guillotine- and sheet-cutting knives and scraper and doctor blades, is described briefly. 1 illustration. E.S.

MACHINERY—MIXING APPARATUS

RUSHTON, J. H., and OLDSHUE, J. Y. Mixing—present theory and practice. Part II. Chem. Eng. Progr. 49, no. 5: 267-75; discussion: 275 (May, 1953); *cf.* B.I.P.C. 23: 642.

The mixing of fluids of low viscosity is discussed with particular emphasis on flow from impellers, turbulence, process requirements, blending, solid suspensions, heat exchange, mixing of immiscible liquids, gas-liquid contacting, continuous flow systems, and equipment for liquid mixing. Each subject is discussed from a practical and theoretical viewpoint and relevant experimental data are presented. 4 tables, 9 figures, and 31 references. R.C.R.

MACHINERY—PAPER MACHINE

BARROW, S. W. Factors limiting paper machine speeds above 600

ft./min. World's Paper Trade Rev. 139, Technical Convention no.: 25-6, 28, 30 (March, 1953).

Consideration is given to the various papermaking factors which may influence the speed at which a Fourdrinier machine may be run above 600 f.p.m. These concern the stock-preparation plant, the machine approach, the paper-machine wire, the suction couch and pick-up, and the drier and finishing sections, particularly the modern improvements and equipment available for achieving higher machine speeds. 3 figures. E.S.

BINNS, W. J. Developments in present day paper-making machinery. World's Paper Trade Rev. 139, Technical Convention no.: 32, 35-6, 38, 40, 42, 45 (March, 1953).

Recent developments on papermaking machinery are reviewed, and the relations between these and faster operating speeds are examined. 1 table and 4 figures. E.S.

TAYLOR, W. Factors limiting paper machine speeds—up to 600 ft./min. World's Paper Trade Rev. 139, Technical Convention no.: 19-20, 22 (March, 1953).

The chief papermaking factors affecting the speed of a Fourdrinier machine running below 600 f.p.m. and making fine papers are wire drainage and formation. Other factors are furnish, stock preparation and consistency, paper substance, delivery of stock onto the machine wire, the operation of table rolls, shake, couch rolls, dandy roll, and dryer felts. E.S.

MACHINERY—PACKAGING MACHINERY

ANON. Bulk packer loads one ton cartons. Packaging Parade 21, no. 244: 102-3 (May, 1953); Food Eng. 25, no. 5: 101 (May, 1953); *cf.* B.I.P.C. 23: 577.

The Richardson Scale Co., Clifton, N.J. has developed a bulk packer which automatically weighs and delivers bulk chemical and food products in large paperboard cartons. Its operation in connection with Bulk-Pak-Bins is described. 3 illustrations. L.C.

BAKER, EDGAR D. S. What does the mechanisation of packaging involve? J. Inst. Packaging 2, no. 14: 65-6, 68, 70, 72 (4th quarter, 1951).

The author discusses the economies of fully mechanized packaging production and describes the details of selecting, installing, and maintaining packaging equipment. L.C.

MACHINERY—PUMPS

ADAMS, HAROLD E. The liquid ring compressor—some thermodynamic characteristics. Tappi 36, no. 5: 193-9 (May, 1953).

The liquid ring compressor and vacuum pump is extensively used in the papermaking industry, but its essential nature and unique features are often overlooked. The basic operating principle is stressed, and the unusual thermodynamic characteristics resulting from the intimate mixing of the gas or air with the spinning liquid ring are indicated, such as the near isothermal direct and evaporative cooling and the condensing characteristics. It is also emphasized that liquid ring pumps cannot be rated on a displacement basis but are tested with air, using water as a seal under a standard set of

temperature conditions and rated in terms of actual delivered capacity. Any material change from these conditions influences the pump's performance. Particular emphasis is laid on the gain in capacity that can be realized when full advantage of the condensing effect between the liquid ring and the saturated mixtures usually encountered in paper machine applications is taken. A typical couch-roll installation is analyzed and complete calculations are presented which illustrate this prevalent though generally unrecognized effect of condensation. A gain of 23% in capacity over standard rating is shown in this example. Data are presented to estimate the increased capacity over standard rating on conventional paper-mill applications. The possible gains in operating efficiency by attention to water-seal temperature and quantity are stressed. 3 figures and 1 reference. E.S.

MACHINERY—REFINERS

AGRONIN, TANY. Further developments in equipment for preliminary refining of kraft. Paper Mill News 76, no. 20: 101-2 (May 16, 1953); Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 135, 137, 139 (1952); *cf.* B.I.P.C. 21: 854.

With reference to the Shartle pressure-type, hot-stock refining system described in the previous article, certain improvements were incorporated in such a unit operating at 6-7% consistency in a southern unbleached-kraft pulp mill. The innovations involved the use of propellers in place of paddles in the blow tank and special fillings for the Hydramills which show very little wear. Data from physical tests on the stock before and after refining are included. The adaptation of this system to high-yield bleached kraft is being considered. 3 tables and 1 diagram. E.S.

MACHINERY—SCREENS

E. D. JONES & SONS COMPANY. Two French machines for American mills. Paper Trade J. 136, no. 17: 32 (April 24, 1953); Tappi 36, no. 5: 106A (May, 1953); Paper Mill News 76, no. 20: 122-3 (May 16, 1953).

The company has just completed arrangements to manufacture and distribute in North America the Lamort high-frequency screen and the Lamort cellular filter under the original patents issued to the French inventors. The cellular filter can be used for white water, raw water, or as a pulp thickener. 3 illustrations. E.S.

MACHINERY—SCRUBBERS

CALLAGHAN, C. V. The venturi scrubber at Bathurst. Pulp Paper Mag. Can. 54, no. 5: 106-7 (April, 1953).

The equipment, operation and control, performance, and maintenance of the venturi scrubber installed at the Bathurst Power and Paper Co. are described. The unit operates on the combined gases of two recovery furnaces at about 90% efficiency. 1 table and 1 diagram. E.S.

WILSON, B. W. The turbocyclone: a new method for separating fine particles from gas streams. Australian J. Appl. Sci. 4, no. 1: 47-57 (March, 1953).

A new principle for the design of gas centrifuges is described; laboratory tests were supplemented by field tests on sodium sulfate fumes in a paper mill and on the exit gases from a contact sulfuric acid plant. In conjunction with these tests, a thermal precipitation was developed to measure the con-

centration of certain types of chemical fumes. 2 tables, 4 figures, and 14 references. E.S.

MACHINERY—STRIPPING MACHINE

MARTIN, DARRELL M. Another development in stripping. Fibre Containers 38, no. 4: 152-4 (April, 1953).

The Cornell Strip-air, an automatic stripping device, which removes scrap from a sheet delivered by a cutting-creasing press is described. The scrap is blasted from the sheets by jets of air which are synchronized with sheet travel. The device was developed at the Milwaukee plant of Cornell Paperboard Products Co. and can be installed on any Miehle extended-delivery, die-cutting press. Proper die-making techniques must be employed to insure successful air stripping. Brightwood, outfold, infold, and lock-corner cartons are best suited for this stripping method. 6 illustrations. E.S.

MASS TRANSFER

PIGFORD, ROBERT L. Mass transfer. Ind. Eng. Chem. 45, no. 5: 957-62 (May, 1953).

A literature review of the important articles on this subject during recent years is presented. 81 references. E.S.

MATERIALS HANDLING

HENKLE, O. T., JR. Proper operator judgment cuts fork truck operation cost. Am. Paper Merchant 50, no. 4: 24, 68 (April, 1953).

The author describes the proper way of using a fork truck, both in loading and the movement of loads, and stresses the necessity of observing general safety precautions through sensible operation and up-to-date maintenance. 4 illustrations. L.C.

HERBERT MORRIS LTD., *Loughborough, England.* Revolutionary lifting gear; newcomers in the field of mechanical handling. World's Paper Trade Rev. 139, no. 4: 263-4, 269 (Jan. 22, 1953).

A new electric hoist block, electric chain hoist, and pulley block are described. 3 illustrations. E.S.

METERS AND RECORDERS

CHARTRAND, J. Y. Automatic control with the betameter. Pulp Paper Mag. Can. 54, no. 5: 108-11 (April, 1953).

Experiments with a betameter installed at either the wet or dry end of a paper machine of the Rolland Paper Co. and the results, especially those with automatic control, are discussed. 10 figures. E.S.

NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT. Proton echo level indicator. Indian Pulp and Paper 7, no. 9: 434-5 (March, 1953).

The development of an instrument for measuring stock level (I) (built by Aktieselskapet Proton in Norway) is described which measures the time a sound wave takes to travel from the sound emitter to the reflecting surface and back again to the microphone. (I) is not a cheap instrument and is not designed as a substitute for pressure or float meters, but only for application where these for some reason cannot be employed. Details of the construction of the instrument are given. E.S.

WALTER, LEO. Flow of fluids in pipelines. Indian Pulp and Paper 7, no. 7: 347-51 (January, 1953).

The author discusses instruments for the measurement and control of rate of flow of liquids and gases. 8 figures and 6 references. E.S.

MICROBIOLOGICAL TESTING

VINSON, L. J. The Lever spore cloud method for the evaluation of antimycotic properties of paper and paperboard used in the soap industry. Tappi 36, no. 5: 234-6 (May, 1953).

A simple and convenient assay method is presented for measuring the degree of resistance of antimycotic-treated paper and paperboard toward soap spoilage organisms. A spore-cloud inoculum is described comprising the test molds grown on wheat bran to yield a highly sporulated mold-bran preparation which remains stable in a dry state for long periods of time. Antimycotic data with the Lever spore-cloud method correlate well with accelerated storage results on soap wrapped in moldproofed paper. 3 tables, 2 figures, and 3 references. E.S.

MILL MANAGEMENT

CADARET, JOHN N. Sulphite superintendents—thinkers or stinkers? Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 101, 103, 105, 107 (1952).

Superintendents must act and think in accord with modern managerial techniques; they must possess superior abilities of understanding, planning, and directing. E.S.

GARDNER, COLIN, III. Constructive industrial relations. Fibre Containers 38, no. 4: 64, 66, 68 (April, 1953).

The program of The Gardner Board & Carton Co. in dealing with its employees and unions is outlined, with particular emphasis on the importance of foremen. These receive a six-month training course and are made a responsible part of management. E.S.

HILLMAN, F. J. Diamond Match streamlines accounting techniques. Am. Paper Converter 27, no. 5: 26-7 (May, 1953).

The centralized accounting procedures of the Diamond Match Co. are described. The wide diversification of company interest makes the employment of the most modern business machines imperative. A Remington Rand "Synchro-Matic" billing system simultaneously produces all forms, from invoices and perpetual inventory forms to quarterly sales reports. 1 illustration. L.C.

HUSTON, R. A. Getting employees to listen. Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 81, 83, 85, 87 (1952).

Getting employees to listen and think requires that management be ready to listen and think. To produce better industrial relations, both labor and management should keep in mind what is right instead of who is right. If management is trying to get the people in their plants to think in harmony with their thought, then these people must be provided with the same basic information which management possesses as a starting point. Mature management must be interested in long-term values—i.e., be willing to set up the example by demonstration, not words. E.S.

MOLECULAR WEIGHT

IMMERGUT, E. H., SCHURZ, J., and MARK, H. Relation of viscosity to molecular weight for cellulose and the investigation of cellulose nitrate in various solvents. Monatsh. Chem. 84, no. 2: 219-49 (April 15, 1953). [In German]

The viscosities of a series of technical cellulose samples of different origin and molecular weight were determined in cupriethylenediamine. The nitrates of these samples were dissolved in acetone, in ethyl acetate, and in ethyl lactate, and the viscosities of the solutions were measured. The osmotic molecular weights of the nitrates were determined in acetone solution. The combined results fit the following equation: $[\eta] = 1.33 \times 10^{-4} \cdot M^{0.905}$. Of the three solvents, ethyl acetate proved the best and acetone the worst; this corresponds to the highest viscosity in ethyl acetate and the lowest in acetone. The relationship of velocity gradient to intrinsic viscosity was measured using a new type of viscometer which is described. The authors recommend extrapolation to a gradient of zero to obtain valid viscosities which will truly represent the properties of the molecules. 8 tables, 15 figures, and 37 references.

K.W., Jr.

PACKAGING

ANGLO-AMERICAN COUNCIL ON PRODUCTIVITY. Fruit and vegetables pre-packaging; a survey of what is being done in America. Paper Box Bag Maker: 99-101, 164-7, 215-16 (February-April, 1953).

Excerpts from the report of a British team on the American prepackaging practices of produce are presented. 3 illustrations. E.S.

ANON. Flash-bulb pocket pack. Modern Packaging 26, no. 9: 107 (May, 1953).

Dura Electric Lamp Co., Newark, N.J. has adopted a die-cut, scored, and glued paperboard carton which holds 12 flash bulbs in a slotted section. The package is a one-piece folding carton in which the slotted portion is integral to the package; it affords the same protection as the former corrugated pack, but it permits easier dispensing and is less bulky. 3 illustrations. L.C.

ANON. One ice cream carton with variety of packaged flavors. Packaging Parade 21, no. 244: 129, 132 (May, 1953).

The Carnation Company recently introduced individually packaged servings of ice cream. Six four-ounce cubes of ice cream, each in a folding carton, are packed in a mother carton which has die-cut windows to reveal the flavor selection. Both "individuals" and mother cartons are made from 14-gage board, waxed on both sides, and are decorated with the Carnation "family" motif. The filling process and equipment are described. 7 illustrations. L.C.

ANON. Package that molds the product. Modern Packaging 26, no. 9: 90-3 (May, 1953).

A package has been designed which not only protects but also molds its contents (butter, margarine, ice cream, gelatin desserts, candy, etc.) into a decorative form and allows them to be turned out in perfect shape. The mold portion of the package is an unplasticized transparent cast vinyl chloride acetate film, which is supported by a spiral-wrapped paperboard ring which protects the contents. The filled mold is further protected by a cover sheet of printed unplasticized Pliofilm, and the unit is packaged in a conventional

waxed folding carton. The continuous package-forming and filling operation is described. 9 illustrations. L.C.

EKCO PRODUCTS COMPANY, *Chicago.* Package becomes product and gets package all its own. Packaging Parade 21, no. 244: 124-6 (May, 1953).

This company first produced aluminum foil containers for use by commercial bakers as baking tins which were at the same time retail packages. Because housewives liked these aluminum packages and saved them for re-use as baking utensils, Ekco began to produce "Foilware" as a houseware as well as a package. Three types of utensils have been developed; they are packaged in a printed polyethylene bag with a saddle label. The bags themselves are re-usable for refrigerator storage. The Foilware and the development of the polyethylene package are described. One of the most popular types of Foilware is the "cook'n freeze" container which has a boxboard cover that fits into grooves along the top of the container. 5 illustrations. L.C.

HERFURTH, O. R. The correct packaging of glass. Neue Verpackung 6, no. 2: 80-1 (February, 1953). [In German]

Several case histories of incorrect packaging of glassware and the disastrous consequences are presented to emphasize the importance of dry neutral wrapping and cushioning material and outer containers for this purpose. Attention must also be paid to the proper storage of the packaging materials prior to use (avoidance of moisture and contact with chemical vapors) and of the packaged glassware. E.S.

INVINCIBLE METAL FURNITURE COMPANY, *Manitowoc, Wis.* No chips . . . but furniture company is winner. Packaging Parade 21, no. 244: 106-8 (May, 1953).

The company prevents shipping damage to its office furniture by using Kimpak as internal packing. Small pieces of the unembossed creped wadding are wedged between the drawers and frames of filing cabinets and desks to prevent chipping of the surface enamel; large sheets of the wadding are used at the top and bottom of the item to prevent marring by abrasion. The furnishings are packed either in 275-lb. corrugated boxes with wood-reinforced top and bottom or in wooden crates. 9 illustrations. L.C.

MAYCOCK, GEO. Packaging development over a generation. J. Inst. Packaging 2, no. 14: 74, 76, 78 (4th quarter, 1951).

The most interesting developments of the last 30 years in packaging design, methods, materials, and machinery are described. L.C.

MUCH, A. F., and BOYLE, F. T. The development of a package for a new product. J. Inst. Packaging 2, no. 14: 60-3 (4th quarter, 1951).

The development of a package is traced through the various departments which are involved in its design, and the problems of a package buyer in finding and adapting suitable packages for new products are described. 1 illustration. L.C.

PAPER—COATED

ANON. Paper and board coating range; the Hunt and Moscrop

system. Paper-Maker (London) 125, no. 2: 122-3; correction: no. 3: 180 (February, March, 1953).

The Hunt and Moscrop system of coating and drying is a continuous process, in which means are provided to allow the materials being processed to continue moving through the coater without interruption, while the empty reel at the receiving end is changed for a full reel and the full roll at the discharge end is changed for an empty one. A loop-forming mechanism at the beginning of the feed builds up a reserve of paper or board upon which the coater may draw during roll changes. The coater can be of the air-knife or brush type; drying is by hot air. 1 diagram. E.S.

ANON. The processing of sensitive plastic dispersions with the airbrush. Kunststoffe (Kunststoff-Praxis) 43, no. 3: 130, 132 (P22, P24) (March, 1953). [In German]

The mode of operation of an airbrush coater for the uniform distribution of plastic coating dispersions is described. An excess of coating solutions is applied by a single coating roll and blown off by the succeeding airbrush (compressed air) which spreads the remainder into a uniform closed nonporous film. Drying is accomplished in tunnel driers (I) with or without supplementary infrared radiators. The type and thickness of the coat, drying temperatures, and speed of the paper web determine the required length of (I). Good results have been obtained with a two-roll calender immediately following (I) for closing pores in the still hot coat which may have been formed during drying. Where low water-vapor permeability is essential, preferably two coats should be applied. The best base papers are smooth, well calendered, and well sized papers of high density and with a closed surface. A number of plastic coating agents are listed which have been successfully applied by means of the airbrush. 1 illustration and 1 reference. E.S.

CREASY, J. J. The use of nitrocellulose lacquers and emulsions in paper coating. World's Paper Trade Rev. 139, Technical Convention no.: 87-8, 90-1, 93-4, 96 (March, 1953); Paper-Maker (London) 125, no. 5: 398-400, 402-4 (May, 1953).

The author describes the properties of nitrocellulose of different viscosities and nitrogen contents, shipping regulations, necessary precautions during handling and storage, principles of lacquer formation, solvents and diluents, emulsions and their advantages, and methods of application for obtaining the desired finish. In conclusion, 10 different formulations are given which illustrate the principles of formulation discussed in the article. 2 tables. E.S.

PAPER—CONVERSION

STOAKES, HAROLD R. Small roll specialties . . . a matter of perfection. Am. Paper Converter 27, no. 4: 22-4 (April, 1953).

The author traces the growth of Paper Manufacturers Co., Philadelphia, from its founding in 1904 to its present operation in its new plant. This converting company produces a variety of gummed paper products and small roll specialties for business machines, police and fire alarms, teletypewriters, etc. The complexity of these converting operations is discussed, and the layout of the new plant and the slitting equipment is described briefly. To meet the close tolerance requirements of modern business machines, the company manufactures its own wood and paper cores. 5 illustrations. L.C.

PAPER—DEFECTS

DAY, FREDERICK T. Paper conversion and usage. No. 48. Print-

ing machine room troubles and paper. World's Paper Trade Rev. 139, no. 13: 939-40 (March 26, 1953); *cf.* B.I.P.C. 23: 740.

The troubles caused to the printer by paper creases, cockling of edges, inaccurate cutting, and paper curling are discussed briefly. 1 illustration. E.S.

DAY, FREDERICK T. Paper curl and wavy edges. Paper & Print 26, no. 1: 98 (Spring, 1953).

The author discusses the curling and waving effect of varying moisture on paper; lightweight papers are especially subject to this problem. L.C.

PAPER AND PULP INDUSTRY

ANON. The progress of the kraft process in the United States; localization, constructions, the provision with water and power. Papeterie 74, no. 12: 805-7, 809 (December, 1952); 75, no. 2: 127, 129, 131, 133-4 (February, 1953). [In French]

The development of the sulfate industry in the United States is discussed, with particular reference to mills in the South and on the West Coast, their water supplies, and heat and power installations. In conclusion, The Swedish sulfate mill at Östrand is listed as an equivalent rival of the American mills, although on a somewhat less gigantic scale. The French kraft industry should adopt the best American practices and realize them according to Scandinavian standards. 29 references. E.S.

CARDEW, JOHN. China's rising paper output. World's Paper Trade Rev. 139, no. 15: 1095-6, 1098, 1100 (April 9, 1953).

Recent developments in the Chinese paper industry are described. E.S.

CARDEW, JOHN. Rumania steps up paper output for home use and export. World's Paper Trade Rev. 139, no. 6: 384, 386, 388 (Feb. 5, 1953).

The postwar modernization of the Rumanian pulp and paper industry, including plans for a large-scale exploitation of reeds, and exports, particularly cardboard, are described. E.S.

JEWETT, A. P., and FOOTE, ROY W. The market. Can. Pulp Paper Ind. 6, no. 4: 34, 36, 38 (April, 1953).

A market report on the Canadian pulp and paper industry reveals that both the newsprint market and, in general, the world market for pulp and paper have been, and over the long range will be, quite stable. Supply and demand appear almost equal at present; should demand increase even slightly, Canadian pulp and paper capacity would be taxed, but the industry, as in the past, could add and improve facilities to meet the problem. Production and market statistics are presented and compared. 3 tables and 1 illustration. L.C.

MCCABE, THOMAS. The paper industry can enjoy an era of prosperity. Am. Paper Merchant 50, no. 5: 26, 61-2 (May, 1953).

The paper industry will continue to grow if both manufacturers and merchants maintain a high-quality policy in manufacture, distribution, and sales. The author discusses four ways of cutting distribution costs. He also emphasizes the need for better human relations throughout the industry and

stresses the importance of arousing the interest of college-trained men in a career in paper. Nationwide business trends are optimistically discussed. L.C.

MANLEY, LEANDER. Past-present trend. Can. Pulp Ind. 6, no. 4: 30, 32 (April, 1953); *cf.* B.I.P.C. 22: 678.

The pulp and paper industry in British Columbia shows a significant trend toward diversification and away from exclusive newsprint production. The pulp and paper production and wood consumption figures which indicate this trend are presented and discussed. 2 tables and 1 illustration. L.C.

NEUBRECH, W. LEROY. Pulp, paper and board industry report. Paper Mill News 76, no. 16: 46, 48, 50-2, 54, 56, 58, 60, 62, 66, 68, 70-2 (April 18, 1953); Tappi 36, no. 5: 16A, 18A, 22A, 24A, 26A, 28A, 30A, 32A, 34A, 36A, 40A, 42A, 44A, 46A (May, 1953); *cf.* B.I.P.C. 22: 678.

The principal article (on industry economics in general) of the quarterly Pulp, Paper and Board Industry Report (annual review) for March, 1953 by the U. S. Dept. of Commerce is reprinted in entirety, including all graphs and statistical tabular data. L.C.

PAPER MILL NEWS. Chronological review. Paper Mill News 76, no. 16: 104, 106, 108, 110, 112, 114 (April 18, 1953); *cf.* B.I.P.C. 22: 679.

Important events which occurred in the paper industry during the past year are reviewed. L.C.

PEDERSON, WALLACE H. Distribution of paper and board production by major grade groups by type of mill. Tappi 36, no. 5: 48A, 50A (May, 1953); Paper Mill News 76, no. 16: 76, 78-80, 82 (April 18, 1953).

The entire special section of the quarterly Pulp, Paper and Board Industry Report (annual review) for March, 1953 by the U. S. Dept. of Commerce is reprinted, including all graphs and statistical tabular data. L.C.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

SEABORNE, CHARLES R. Our experience with three weeks of open house. Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 320, 322, 325 (1952).

The development and execution of the open-house project of the Thilmany Pulp & Paper Co., Kaukauna, Wis. is outlined. The original talk was supplemented by a series of pictures taken during that period. A motion picture "Where there is smoke there is prosperity" was also shown. E.S.

PAPER AND PULP MILLS

ANON. Canadian Glassine Company Limited opens new plant. Pulp Paper Mag. Can. 54, no. 5: 93-5 (April, 1953); Paper Mill News 76, no. 19: 12, 14, 22 (May 9, 1953); Paper Trade J. 136, no. 16: 40-1 (April 17, 1953).

The recent dedication of the Quebec mill jointly owned by Deerfield Glassine Co., Inc. and the Anglo-Canadian Pulp and Paper Mills Ltd. is described; the mill is equipped to make all grades of glassine and greaseproof paper, as

well as other lightweight specialties. The building and the equipment are discussed briefly. 5 illustrations of the mill and equipment. L.C.

ANON. New Zealand project nears completion. World's Paper Trade Rev. 139, no. 6: 438 (Feb. 5, 1953); *cf.* B.I.P.C. 21: 713.

A brief reference is made to the progress in the pulp, paper, and timber project of New Zealand Forest Products Ltd. at Kinleith; it includes an unbleached sulfate mill; a kraft paper mill; the manufacture of fiber building boards, boxes, and shooks; a sawmill; and the construction of the township. Monterey pine (*Pinus radiata*) supplies the raw material. 1 illustration. E.S.

ANON. Progress of bagasse pulp & paper mill in Brazil. Paper-Maker (London) 125, no. 2: 98 (February, 1953); World's Paper Trade Rev. 139, no. 12: 863 (March 19, 1953); *cf.* B.I.P.C. 22: 122.

Four photographs illustrate the progress made at the 24-tons daily, bleached-bagasse pulp plant of the Refinadora Paulista, S.A. enterprise in Monte Alegre, Sao Paulo, Brazil. The continuous Celdecor-Pomilio soda-chlorine process will be employed; the machinery for the pulp mill is delivered from South Africa and Great Britain. A paper machine will be supplied by Bagley & Sewall from the United States. 4 illustrations. E.S.

COOLEY, E. C. Engineering features of the Elk Falls Paper Mill. Can. Pulp Paper Ind. 6, no. 4: 100, 102, 104, 106, 108, 110, 112, 114, 116 (April, 1953); *cf.* B.I.P.C. 23: 114.

The author describes the engineering problems involved in planning the Elk Falls Company Limited newsprint mill at Duncan Bay, B.C. The mill began operations in June, 1952. 3 illustrations. L.C.

LEWIN, H. M. S. The story of Bowater's. Can. Pulp Paper Ind. 6, no. 4: 8-16, 32 (April, 1953).

The history of Bowater's Newfoundland Pulp and Paper Mills Ltd. at Corner Brook is traced, and a general description of the mill operations and different departments is given. The integration of the Bowater organization on a world-wide basis is outlined briefly; the company is currently building a new mill in eastern Tennessee. 12 illustrations. L.C.

MAJUMDAR, B. N. Plea for a pulp mill. Indian Pulp and Paper 7, no. 9: 433, 435 (March, 1953).

All important paper mills in India are integrated pulp- and papermaking units; many of the old mills cannot increase their output on account of their restricted pulpmaking facilities or local shortages of raw materials. The author suggests the construction of independent pulp mills in bamboo-growing areas as a solution to the problem. E.S.

PULP AND PAPER MAGAZINE OF CANADA. Canada Paper Company's 5 year expansion program. Pulp Paper Mag. Can. 54, no. 5: 86-92 (April, 1953).

The history of the company is traced from its founding in 1859 to its present development; it began a five-year expansion program at its Watapeka, Quebec (previously called Windsor) mill in 1947. The improvements which have been made thus far are discussed under the following headings: digester

washer building, screening, recovery, refining, paper machines, other improvements, production, personnel, and converting department. The various production departments and their new and rebuilt equipment are described. 9 illustrations. L.C.

PAPER CONDITIONING

AMERICAN VISCOSE CORPORATION. *Sylvania Division.* A paper conditioning unit for attachment to printing machines. Paper Box Bag Maker: 155 (March, 1953); Paper Market: 82 (March, 1953).

A small reconditioning unit which can be attached to any vertical or horizontal printing press has been developed for returning the paper or other printing material to normal by replacing moisture loss during the conversion process. 1 diagram. E.S.

PAPER FINISH

ANON. Paper surfaces; how to judge "finish." Paper Making and Paper Selling 71, no. 4: 6 (Winter, 1952-53).

Several types of surface finish are described, and their suitability to various printing methods is discussed. L.C.

PAPER SPECIALTIES

ANON. Banks and bonds. Paper Making and Paper Selling 71, no. 4: 29 (Winter, 1952-53).

The identifying features of the various classes and grades of bank and bond papers are described. L.C.

ANON. New export-packaging material. Verpackungs Rundschau no. 2: 69-70 (February, 1953). [In German]

Reference is made to a new flexible wrapping material (K 30) for corrosion-preventive packaging for which high strength properties, water-vapor-proofness, air- and waterproofness, gastightness, and excellent low-temperature resistance are claimed. The flexibility of the material permits tight wrapping around the different shapes of articles to be packaged; it can be heat sealed and is not sensitive to acids or alkalies. The manufacturer is W. Bosch & Co. in Germany. The test results of three different laboratories (St. Gallen, Munich, and Delft) are included. 3 illustrations. E.S.

CHEMICAL ENGINEERING. Photographic sensitizing. Chem. Eng. 60, no. 5: 274-7 (May, 1953).

A pictured flowsheet is presented of the process of coating photocopy paper as done by Peerless Photo Products Co., Shoreham, N.Y., including the different steps involved in the preparation of the solution, the coating of the paper, drying, rehumidifying, seasoning in the store room for about two weeks, and final inspection and wrapping. 1 flowsheet and 5 illustrations. E.S.

CRAIG, F. A. Paper and papermaking; wrappings. Paper & Print 26, no. 1: 88, 90, 92 (Spring, 1953); *cf.* B.I.P.C. 23: 429.

The furnishes and properties of the following types of wrapping paper are described: M.F. and M.G. krafts, imitation krafts, common browns, sulfites, casings, tea cartridges, and tissues. The various food wrappings discussed are

vegetable parchment, greaseproof, imitation greaseproof, glassine, glazed transparent paper, and glazed imitation parchment. In addition, several classes of absorbent papers are discussed, including blottings, filter papers, paper towels, duplicator papers, and cable papers. L.C.

DAY, FREDERICK T. Heatsealing; papers—methods and machinery. Paper Box Bag Maker: 136-7, 139-40; 184-5, 187; 251-5 (October-December, 1952); 55-9 (January, 1953).

The author discusses the different types of heat-sealing papers and their applications, as well as the machinery and equipment employed in their manufacture and conversion. 1 table and 14 illustrations. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 44. Paper lace—printed, embossed, plain and fancy. World's Paper Trade Rev. 139, no. 3: 190, 192 (Jan. 15, 1953); *cf.* B.I.P.C. 23: 429-30.

The manufacture of paper lace and lace bands and the principal applications are described, including boxmaking, displays in shops and windows, greeting cards, and other forms of decoration. 2 illustrations. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 45. (Parts 1 and 2). Fancy and decorative household paperware. World's Paper Trade Rev. 139, no. 5: 304, 306, 308; no. 7: 492, 494 (Jan. 29, Feb. 12, 1953).

In the first part, the history and manufacture of lace paper are recorded, in conjunction with other table and decorative items of stationery. In the second part, dessert papers, doilies, dish and plate papers, and tray papers are discussed. 4 illustrations. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 47. Covers for booklets, catalogues, price lists, etc. World's Paper Trade Rev. 139, no. 11: 810-11 (March 12, 1953).

The importance of covers for a well-designed printing job, the difference between early and modern cover papers available for all jobs and tastes, and important use requirements for different conditions, including flexibility, are discussed. 1 illustration. E.S.

FAGG, ELIZABETH. Profits for you in the send-out box luncheon. Am. Paper Merchant 50, no. 5: 18-19, 60 (May, 1953).

The increasingly popular send-out box luncheon is raising the paper merchant's profits by providing a market for many specialty items. The packaging methods of several restaurants are described, and the paper salesman is urged to acquaint his restaurant customers with the profits of a send-out sideline. 3 illustrations. L.C.

IYENGAR, N. K. SESHADRI. Absorbent papers; a comparative study of efficiencies. Indian Pulp and Paper 7, no. 7: 352-7 (January, 1953).

The starch-sized handmade paper of the Kagzis of the All-India Village Industries Association was principally used as writing paper; however, since it was generally produced from waste paper (I) collected in government offices, its quality (ink resistance in particular) was so poor that even the government, the main purchaser, had to give up its use. To help the hand-

made-paper industry, a study was initiated at the Paper Research Centre, Poona to investigate the suitability of (I) for conversion into blotting paper. (I), when digested with 1% soda ash or 2% caustic soda, dyed, and treated with 0.5% sodium silicate and 1% alum, yielded an absorbent stock from which blottings of equal quality as imported blotters could be prepared; uncalendered sheets showed a better absorptivity than calendered sheets. It is suggested that the Kagzis might profitably divert their attention to the manufacture of good blotting papers for which they will obtain a much better price than for their inferior writing paper. Tabular data are included in the article. E.S.

KANTROWITZ, MORRIS S. Paper characteristics for good printing. Share Your Knowledge Rev. 34, no. 8: 13-14 (May, 1953).

The author describes the following paper characteristics which he considers most important from the printing standpoint: smoothness, ink receptivity, porosity, surface strength, opacity, closed formation, uniform thickness, uniform color, resistance to flaking and dusting, absence of abrasive particles, and a good general appearance. L.C.

KELMINSON, DANIEL. Better twine merchandising. Paper & Twine J. 27, no. 2: 31-3 (April, 1953).

To acquaint the twine salesman with the different types of tying materials, the author describes the properties of paper, jute, cotton, and hard fiber twines. Three important points on which to compare twines are relative yardages and tensile strength, knot strength, and uniformity of twist. L.C.

KUSSOW, L. E. Paper for gravure. Am. Pressman 63, no. 5: 31 (April, 1953); Printing Equip. Engr. 83, no. 4: 44, 46 (January, 1953). [Abridgments]

The author discusses the characteristics of newsprint, supercalendered book, and semicoated and coated book papers as they apply to rotogravure printing. The paper industry is aware of the printer's problems and tries constantly to meet specifications for well-wound rolls of uniform web draw, roll to roll uniformity, and smoothness, small variations of which are greatly magnified by gravure reproduction. L.C.

LAIRD, ANN LUCILLE. All-paper service for food. Paper Sales 13, no. 5: 16, 55-6 (May, 1953).

The advantages of attractive paper food service for isolated patients are described, as well as the aseptic techniques employed in serving the meals and the disposal of the used containers. 1 illustration. L.C.

MEIER, RICHARD. Organic substances in photography and reproduction techniques. Angew. Chem. 65, no. 7: 179-82 (April 7, 1953). [In German]

The author reviews the important literature on the use of light-sensitive organic compounds in photography, with particular reference to practical methods or those which offer possibilities for further development. One section is devoted to the diazotype and metal diazonium processes, including suitable papers and films. 37 references. E.S.

MINNESOTA MINING AND MANUFACTURING COMPANY LTD., *Birmingham, England.* "Scotch Boy" double coated tape. World's Paper Trade Rev. 139, no. 11: 812, 817-18 (March 12, 1953).

Useful applications of Scotch Boy double-coated tissue tape No. 400 in different conversion and printing processes are outlined. 9 illustrations. E.S.

PATENTS

WEST, CLARENCE J. United States patents on papermaking, fourth quarter, 1952. Tappi 36, no. 5: 150-5A (May, 1953); *cf.* B.I.P.C. 23: 346.

An annotated list of U. S. patents for the fourth quarter of 1952 is presented. E.S.

PHYSICAL TESTING—INK

BRITISH PRINTING INK ASSOCIATION. *Technical Committee.* Specification printing. Paper Box Bag Maker: 60 (January, 1953); Paper & Print 26, no. 1: 62 (Spring, 1953).

The application of the weighed copper-shell technique developed by PATRA (*cf.* B.I.P.C. 10: 353), is recommended for the preparation of "standard prints" to be used in tests relating to light fastness and color measurement of printed matter. E.S.

PHYSICAL TESTING—PAPER—BASIS WEIGHT

BALDWIN INSTRUMENT COMPANY, LTD., *Dartford, Kent, England.* Beta ray substance gauge. World's Paper Trade Rev. 139, no. 11: 792-4 (March 12, 1953).

The principal features of the Baldwin "Atomat" and typical installations are described; Tl^{204} is used on paper and dry board and S^{90} on wet board as the radioactive source. 1 table and 1 illustration. E.S.

GERMAIX, A. Beta gages involving back-scattering in the measurement of slight thickness; their application in the continuous control of basis weight on paper machines. Assoc. tech. ind. papetière, Bull. no. 2: 29-33 (1953). [In French]

A fully described β-gage, by means of back-scattering serves to correlate the current developed in an ionization chamber with sheet thickness and/or basis weight (I) of a moving sheet. Thus changes in (I) can be recorded automatically and continuously. The source of radiation are S^{90} and Tl^{204}, which serve to cover the (I) of sheets ranging in thickness from 0.03 to about 1.6 mm. 2 tables and 5 figures. L.E.W.

PHYSICAL TESTING—PAPER—BURSTING STRENGTH

TUCK, N. G. M., FAICHNEY, L. M., and MASON, S. G. The dynamic calibration of Mullen tester gauges. Pulp Paper Mag. Can. 54, no. 5: 102-5 (April, 1953).

A simple method of calibrating Mullen tester gages under conditions of dynamic loading which simulate those in the bursting of papers is described. The apparatus is a modification of a piston-type deadweight gage and utilizes the pumping mechanism of a Mullen burst tester. Although this technique has been developed specifically for calibrating gages used in the burst test for paper materials, the principle is applicable to gages used for other purposes where the rate of pressure application is known. 2 tables, 5 figures, and 6 references. E.S.

PHYSICAL TESTING—PAPER—FOLDING ENDURANCE

ANON. A new Schopper Duplex folding tester. Das Papier 7, no. 7/8: 136 (April, 1953). [In German]

An improved construction is briefly described which involves two parallel folding units in a dustproof box provided with a glass plate in the lid through which the performance of the tester can be observed. The instrument can be connected to air-conditioning equipment so that the test can be carried out under standard temperature and humidity conditions; it is driven by an electric motor. Duplex folding testers are available in four different constructions for paper, board, cigarette and tissue papers, and plastic films. 1 illustration. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

LEES, A. Temperature control on paper machines. World's Paper Trade Rev. 139, no. 9: 653-4, 656 (Feb. 26, 1953).

The technique developed by Strâtveit and Schie in Norway for measuring the moisture content of the web on the paper machine (*cf.* U. S. patent 2,611,974, granted Sept. 30, 1952; B.I.P.C. 23: 221) is recommended for the control of paper-machine operation to obtain papers straight from the machine of a quality comparable with conditioned papers. 3 references. E.S.

PHYSICAL TESTING—PAPER—WET BLEED

PEARL, C. CHARLES, and CARBONE, C. J., JR. A method for quantitative determination of wet bleed. Tappi 36, no. 5: 206-7 (May, 1953).

A practical wet-bleed test for colored paper and a method for obtaining a numerical value for the amount of bleed are presented. A sample of the colored stock is dipped into distilled water just sufficiently long to wet its surface, then sandwiched between two sheets of bleached kraft; the assembly is smoothed by hand to insure positive contact and allowed to dry at 73°F. and 50% R.H. The amount of bleed from the colored into the bleached kraft sheets is measured with a photoelectric colorimeter. The method is simple and can be rapidly performed and interpreted by nontechnical personnel. 1 table. E.S.

PHYSICAL TESTING—PULP—FREENESS

SKAUGEN, LARS. Investigations of errors in the determination of Schopper-Riegler beating degrees. Norsk Skogind. 7, no. 4: 118 (April, 1953). [In Norwegian]

Experimental evidence is presented to show that the results obtained in a Schopper-Riegler freeness tester depend to a great extent upon the method of pouring the fiber suspension (I) into the receiving receptacle. Lower values were consistently obtained when (I) was poured directly upon the conical valve (II) than when it was delivered in an oblique direction so that a circular motion of (I) around (II) resulted. 1 table. E.S.

PHYSICAL TESTING—PULP—MOISTURE

BARKAS, W. W., and HALLAN, R. A measurement of the forces of liquid retention by wet paper making fibres. World's Paper Trade Rev. 139, Technical Convention no.: 52, 57-8, 60, 62, 64, 67-8 (March, 1953).

The forces which hold water in a fiber mat are discussed, with particular reference to the theory of capillary-held water, and this is applied in describing the drying of a fiber mat from the waterlogged state. A method of determining the static-equilibrium moisture content of a fiber mat is described in detail. By this technique the hydrostatic tension in the liquid is controlled and the moisture content of the fiber mat determined for various tensions up to 18 cm. mercury. A method of forming the fiber mat is described. The results are plotted as tension/moisture-content isotherms; these vary for different types of fiber. Beating increases the moisture retention at high tensions, and it has been found feasible to characterize the physical state of the fibers by their moisture retention at one particular tension (arbitrarily chosen at 14 cm. mercury). This is compared with the freeness of the pulps and with the strength values of the paper made from the pulps. Possible future uses of the test are outlined. 4 tables, 10 figures, and 16 references. E.S.

PHYSICAL TESTING—TAPE TESTER

ANON. A German instrument for measuring the bonding strength (tack) of gummed papers. Verpackungs Rundschau no. 1: 30-1 (January, 1953). [In German] *cf.* B.I.P.C. 23: 274-5.

The gummed-paper tester by Neubronner (constructed by Karl Frank, Weinheim-Birkenau) and its mode of operation are described. 2 illustrations. E.S.

PHYSICAL TESTING—WAX

[YATES, W. J.] TAPPI-ASTM Technical Committee on Petroleum Wax. Tappi 36, no. 5: 117-23A (May, 1953); *cf.* B.I.P.C. 22: 935-6.

Brief reports of the chairmen of the different sections of the committee are given as follows: Schindler, H. Flow tests, p. 117A; Hinds, G. P., Jr. Oxidation, p. 117-18A; Fronmuller, G. D. Sensory tests, p. 118A; Rather, J. B., Jr. Composition, p. 119A; Hitchcox, H. F. Blocking points, p. 119-20A; Borden, G. C., Jr. Sealing strength, p. 120A; and Mueller, G. P. Scuff and gloss, p. 120A. A list of the members of the committee and its different sections is appended. E.S.

PHYSICAL TESTING—WOOD

KLOOT, N. H. Impact hardness tests on wood. I. The effects of machine variables. Australian J. Appl. Sci. 4, no. 1: 65-76 (March, 1953).

Impact-hardness tests were made on several timber species using the falling-ball technique; carbon paper on the face of the specimen was used to provide a permanent record of the surface area of the contact at impact. By showing that the contact area is directly proportional to the square of the ball diameter and the square root of both the ball density and height of drop, it has been confirmed that the volume of nonelastic indentation is directly proportional to the impact energy. Pencil carbon proved more sensitive than typing carbon and therefore more suitable as a recording medium; within the limits of the experiments, the thickness of the white paper on which the record was made appeared to have no significant effect. 6 tables, 5 figures, and 8 references. E.S.

PITCH TROUBLES

BACK, ERNST. Pitch troubles in the Swedish paper industry.

Svensk Papperstidn. 56, no. 8: 284-6 (April 30, 1953). [In Swedish; English and German summaries]

By means of a detailed questionnaire to Swedish pulp and paper mills, a special committee on pitch troubles of Svenska Pappers- och Cellulosaingeniörsföreningen collected information on pitch troubles existing in Swedish pulp and paper mills, methods for combating, and process factors affecting the problem. A summary of the collected information is presented under the headings: the actual problem, wood quality, manufacture of sulfite pulp, manufacture of paper, and control and cost. E.S.

PLASTIC FILMS—TESTING

BRUBAKER, DAVID WILLIAM, and KAMMERMEYER, KARL. Flow of gases through plastic membranes. Ind. Eng. Chem. 45, no. 5: 1148-52 (May, 1953); *cf.* B.I.P.C. 23: 571.

Permeability data are reported for 54 film samples for five common gases (helium, hydrogen, carbon dioxide, nitrogen, and oxygen) at three different temperatures. The effects of pressure and temperature of the gases as well as of the thickness, molecular weight, plasticizer content, and polymeric type of the films are discussed. The permeability data reported are particularly useful in commercial applications, such as packaging; in addition, they may be used for predicting gas separation characteristics of plastic films, as the permeation of the components of gas mixtures is directly proportional to their respective permeabilities. 7 tables, 4 figures, and 7 references. E.S.

PLASTIC FILMS (NONCELLULOSIC)

OSWIN, C. R. The application of protective wrappings. Brit. Packer 14, no. 10: 36-41; no. 11: 32-5; no. 12: 24-7, 43 (October-December, 1952); 15, no. 1: 69-72, 77; no. 2: 143-6; no. 3: 202-5, 208; no. 4: 275-9, 287 (January-April, 1953); *cf.* B.I.P.C. 23: 198.

In this second series of articles, methods of preparing and applying various protective wrappings are described, including storage and handling, wrapping machines and methods for different commodities, sealing and adhesives, printing by different processes, conditioning the film before printing, the water-vapor diffusion problem, climatic factors, and kinetics of package life. Although the articles deal largely with specific applications, the author's aim is not to provide detailed recommendations for particular products, but rather to indicate methods for selecting suitable materials for specific wrapping purposes. A third series of articles will be published in succeeding issues. 7 tables, 12 diagrams, 7 illustrations, and 100 references. E.S.

PLASTICS—HONEYCOMB

ANON. Honeycomb's expanding future. Bakelite Rev. 25, no. 1: 16-18 (April, 1953).

Uses for kraft-paper honeycomb core material, a laminate of paper sheets (unimpregnated or impregnated with phenolic resins) and a resin adhesive, are enumerated. Its high strength-weight ratio, good thermal insulating and fire-resistant properties, resistance to decay by fungi, and low maintenance cost have led to its use as a structural material (combined with gypsum or cement-asbestos board), for protective packaging, and for materials handling (as pallets and ventilated pads). 10 figures. R.C.R.

POWER, HYDRO-ELECTRIC

CANADIAN PULP AND PAPER INDUSTRY. Report on electric power

as a factor in pulp and paper production in Canada. Can. Pulp Paper Ind. 6, no. 4: 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82 (April, 1953).

The present and potential hydroelectric development of Canada is presented in reports from nine provinces. The authors and titles of the reports are as follows: Jack, Grant R. Newfoundland's power is a generous gift of nature, p. 62, 64; Dixon, W. A. Interconnection of power in New Brunswick, p. 64, 66; Fellows, Howard. Nova Scotia Power Commission relieves some drain, p. 66; Anon. Quebec power keeps pace with three largest customers, p. 68; Anon. Ontario Hydro Commission is partnership in power development, p. 70, 72; Anon. Manitoba power development moves north, p. 72, 74; Weinstein, S. A. Saskatchewan power awaits pulp development, p. 74, 76; MacGregor, J. G. Alberta power has potential for pulp development, p. 78; McKeachie, J. G. Interlocking potentials in BC power development, p. 78, 80, 82. 3 tables and 5 illustrations among the reports as a whole. L.C.

PRINTING AND PRINTER'S INK

ALDERSON, A. J. Paper and the printer. III. Trimming and storage. Paper & Print 26, no. 1: 26-8, 30, 32, 34, 38 (Spring, 1953); *cf.* B.I.P.C. 23: 434.

The importance of perfectly square paper, the responsibility for guillotine trimming of the paper stock by either papermaker or printer, paper of uniform weight and caliper, correct moisture content, and correct storage and handling at the printer's plant are discussed, with frequent reference to good and bad practices. 5 illustrations. E.S.

CHOPIN, W. L., and LATHAM, CHARLES. What the boys in the back room want. Am. Paper Merchant 50, no. 5: 30, 68-9 (May, 1953).

The pressman wants "runability" in the paper he uses; he wants paper that will feed uniformly, perform well in the nip, jog, and run through the folders and bindery. The salesman who deals with the printer will find it useful to acquaint himself with the problems which plague the pressman. The authors describe some of the problems and show how the salesman can offer his services as trouble-shooter by being able to recommend the right paper for each job and to suggest improved methods of handling the paper and presses. Likewise, a knowledge of printing costs and press-hour costs relative to the cost of the paper will make the salesman a welcome consultant to the printer's purchasing agent. 1 illustration. L.C.

VARRON, FREDERICK A. How inks dry. Interchem. Rev. 12, no. 1: 3-22 (Spring, 1953).

The mechanisms of the drying of printing inks by absorption, evaporation, precipitation, solidification, filtration, and gelation (physical processes), and oxidation, polymerization, and thermal polymerization (chemical processes) are described in detail. The paper, ink pigments, and solvent (or vehicle) play different roles in each process and, although one method may predominate in the drying of one type of ink, most inks dry by a combination of methods. The mechanisms for drying inks by chemical reactions are illustrated with formulas showing the molecular changes involved. 11 figures and 16 references. R.C.R.

PRINTING AND PRINTER'S INK—ANILINE PROCESS

DEENEY, JAMES J. Development and growth of aniline ink print-

ing. Am. Paper Converter 26, no. 11: 15-17 (November, 1952); Share Your Knowledge Rev. 34, no. 6: 13-14 (March, 1953).

Developments in aniline (flexographic) printing inks, particularly opaque inks which could be used on cellophane, and improvements in presses and rubber plates used with these inks are briefly recorded. 4 illustrations in the first reference. E.S.

DIETZ, ROBERT. Flexographic (aniline) process growing rapidly. Inland Printer 130, no. 5: 35-7 (February, 1953); *cf.* B.I.P.C. 23: 435.

This article contains essentially the same material as the previous reference. 8 illustrations. L.C.

PRODUCTIVITY

HOLLINGER, C. B. Time reporting in the setup box plant. Am. Boxmaker 42, no. 5: 11-13 (May, 1953).

Daily job-time reports provide a basis for comparison of the production of employees from day to day. Wide variations in volume are immediately noticeable on these reports and can be investigated by the superintendent. The author describes 12 common causes for downtime and lowered production which should be watched in the box plant. 1 illustration of a time-ticket form. L.C.

PYRITES

ANON. Copper tailings now sulfite pulp mill's sulfur source; capacity production of pulp assured. Chem. Processing 16, no. 5: 8-11 (May, 1953); *cf.* B.I.P.C. 23: 436.

The FluoSolids system installed at the sulfite mill of the Brown Co. at Berlin, N.H. is described briefly. 1 flowsheet and 3 illustrations. E.S.

QUOTATIONS

ARNOLD, GRAHAM. Shakespeare and the paper trade. Paper Market: 110 (April, 1953).

Quotations from Shakespeare's works relating to paper are listed. 18 references. E.S.

RADIOACTIVITY

POURADIER, J., VENET, A. M., and CHATEAU, H. Contamination of packing containers by radioactive substances. Assoc. tech. ind. papetière, Bull. no. 2: 34-7 (1953). [In French]

X-ray films, shipped in cardboard containers (I) showed unaccounted for dark spots on development, the source of which was traced to radioactive dust in (I). In one series of studies the ash from 11 kg. of (I) was treated 75 hours at 70°C. with 20% hydrochloric acid, and the filtered concentrated solution (freed from silicon dioxide) was treated with barium chloride and sodium sulfate to yield a barium sulfate (II) which, together with other components, was separated by an analytical scheme, outlined in a flowchart. The various fractions were examined systematically for β-activity which was shown to be absent from all reagents used in the separation. In another series only those portions of (I) were incinerated which showed a β-activity of 350 counts/minute: barium sulfate (III) was prepared from these portions

by treatment as above. Both (II) and (III) resulted in a concentration of radioactive material but, whereas the radioactivity of (II) increased during the first six days, and then decreased gradually, the activity of (III) which was initially very slight rose rapidly during 20 days and then levelled off. The significance of these differences is discussed. Evidently disintegration products emanate from UX-1 present in the fine dust of (I). The possible serious consequences of radioactive material in (I) used in packaging of films are outlined. 2 tables, 4 figures, and 1 chart. L.E.W.

RAW MATERIALS

MEZERIK, A. G. Paper; food for thought. Am. Forests 59, no. 4: 16-18, 48-9 (April, 1953).

The need for new sources of pulp for paper continues to grow. Under FAO and independent research groups, many different sources are being investigated; among them are papyrus, bagasse, bamboo, Peruvian cetico, palm, hardwoods, African bango, and cotton stalks. Wheat- and rice-straw paper have been developed. The possibilities of growing pine in Australia, New Zealand, and South Africa, and Alaskan conifers in Iceland are also being probed. 6 illustrations. L.C.

RESEARCH

HOWARD, E. J. Expanding the horizons of wood carbohydrates. Pulp Paper Mag. Can. 54, no. 5: 116-20 (April, 1953).

The author reviews some of the fundamental research problems on wood carbohydrates which should be investigated by Canadian universities and research institutes, including the possibilities for better yields, the responsible factors for making a good paper or dissolving pulp, the biosynthesis of carbohydrates, and different reactions (oxidation, color reversion, effect of sulfite liquor, caustic soda, and water). 19 references. E.S.

RESEARCH LABORATORIES

ANON. From Uddeholm's research activity. The cellulose laboratory at the Skoghall mill. Svensk Papperstidn. 56, no. 8: 293-8 (April 30, 1953). [In Swedish]

An illustrated account of the activities of the cellulose research laboratory at Skoghall is given; these are organized in five different departments—i.e., one for cellulose research with subdivisions for viscose rayon and paper, one for cellulose derivatives, one for the development of microbiological by-products, one for analytical work, and a library and patent department. 20 illustrations, including one floor plan. E.S.

DÉRIBÉRÉ, MAURICE. A publication for the benefit of paper or how to care, restore, and reconstitute deteriorated documents at the Istituto di Patologia del Libro in Rome. Rev. papiers et cartons 16, no. 7: 3-6 (April 1, 1953). [In French] *cf.* B.I.P.C. 23: 666.

The work of Alfonso Gallo, the director of the unique Italian institution (who died Dec. 1, 1952) entitled "Patologia e terapia del libro" (Roma, 1951) is discussed, and the research laboratories, facilities, and activities of the institute are reviewed. 4 illustrations. E.S.

KOTTE, HANS. Packaging research and testing throughout the world. Verpackungs Rundschau no. 1: 1-3; no. 2: 45-9; no. 3: 92, 94-8, 100-2 (January-March, 1953). [In German]

A review of the activities and facilities of the packaging research and testing laboratories of the world is presented, with particular emphasis on the European institutions. The Laboratoire Général pour Emballage in Paris, the PATRA institute at Leatherhead, England, the testing laboratory of the Belgian railways at Brussels, the Dutch Proefstation voor Verpakkingen T.N.T. at Delft, the prewar German testing laboratory at Altenburg, the postwar research laboratory at Offenbach (founded in 1950), and the Institut für Lebensmittel-Technologie und Verpackung at Munich are described. The description of the French laboratory is based on a paper by Henry Felten, that of the PATRA institute on a description by A. C. Poulter. 26 figures and 3 footnotes. E.S.

RESIN, SYNTHETIC

FLOYD, DON, PEERMAN, DWIGHT, and LING, ROSE. Child prodigy resin shows parents new tricks. Progress thru Research 7, no. 3: 1-5 (Spring, 1953).

A brief history of the resin combination, polyamide resin-epoxy resin, is given, and its chemical and physical characteristics are outlined. Depending on the ratio of polyamide to epoxy resin, the properties of the cured product vary and the blend finds use in the different fields of protective and decorative coatings, casting and potting, and adhesives. 1 table and 10 illustrations. R.C.R.

RESIN, SYNTHETIC—IDENTIFICATION

WANNOW, H. A. The detection of melamine-resin deposits in cellulosic fibers and fabrics. Melliand Textilber. 33, no. 8: 758-61 (August, 1952). [In German; English, French, and Spanish summaries]

The presence of durable resins, such as melamine-formaldehyde resins, incorporated in cellulose fibers and textiles can be determined with suitable dyestuffs (acid dyes with affinity for the resin and not for the cellulose, or vat dyes with affinity for the cellulose and not for the resin) and with the Tollens reagent. Although these methods are valuable in the microscopic investigation of the incorporation of the resin in individual fibers, no information is obtained on the uniformity of the deposition in fabrics; for this purpose, as well as for the determination of the resin fixation, staining of the finished piece goods is recommended. 7 figures and 8 references. E.S.

ROOFING FELTS

HAZMBURG, R. S. VON. Roofing felt—yesterday and today. Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 229, 231 (1952).

Following a brief description of the manufacture of roofing from dry felt (I), the required properties of (I) are discussed. It must have high asphalt absorptive properties, sufficient strength to be handled through the roofing machine, sufficient tear resistance, flexibility, and ability to withstand high saturant-asphalt temperatures. (I) has been and is still being made from waste paper and old rags; frequently fine sawdust is incorporated to increase the saturating property. The suitability of Asplund fiber for the manufacture of (I) is discussed, and weathering tests extending over a period of 10 years with (I) furnishes varying from high rag content and no wood fiber to furnishes with high wood contents are described. The work indicates that properly prepared wood fiber can be used to replace all or part of the rags. The preparation of the furnish and the uniform formation of the felt were found to be more important than the furnish components. E.S.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. How to arrive at the correct decision in selecting salesmen. Paper & Paper Products 94, no. 17: 6-7 (May 20, 1953).

The author discusses aptitude testing as a valuable guide in the selection of salesmen; results of the tests have been estimated as 89% accurate. The services offered by aptitude-testing organizations are described. L.C.

FRANKLIN, S. W. How to find good salesmen. Paper & Paper Products 94, no. 12: 1, 4-6 (March 5, 1953).

The author stresses the importance of hiring good salesmen in order to reduce costs by increasing sales efficiency. He lists nine sources for recruiting salesmen and evaluates the reliability of these sources. L.C.

FRANKLIN, S. W. How to select salesmen most likely to succeed. Paper & Paper Products 94, no. 14: 1, 20-1 (April 5, 1953).

In order to attract the right type of men into paper sales, it is necessary to sell the candidate on the paper industry, the company, and the opportunities in this area of sales. The author describes nine ways of arousing the applicant's enthusiasm. He also describes 12 deterrents to a successful salesman and suggests that men who are victims to these faults be eliminated. L.C.

FRANKLIN, S. W. How to use modern tools for selecting good salesmen. Paper & Paper Products 94, no. 16: 1, 18-19 (May 5, 1953); *cf.* B.I.P.C. 23: 278.

Mistakes in hiring sales applicants are very costly. In view of this, the selection of candidates cannot be too careful. The job which is to be filled should first be analyzed as to its title, compensation, age range, physical requirements, necessary experience, trade to be called on, type of selling, initiative requirements, pattern of activities, entertainment requirements, sales equipment, sales training, and opportunity for the future. This analysis can be used by the applicant and the hirer to determine the applicant's interest in, and suitability for the position. During the second interview the applicant fills out a detailed personal data form; this is followed by a personal interview and physical examination. An aptitude test is prerequisite to the final decision. 4 illustrations of interview forms. L.C.

SETUP BOXES

NATIONAL PAPER BOX MANUFACTURERS ASSOCIATION. "Award-winning" setup paper boxes. Boxboard Containers 71, no. 725: 30-1, 34-6 (May, 1953); Am. Boxmaker 42, no. 5: 15-16, 18, 20, 22, 25-6 (May, 1953); Modern Packaging 26, no. 10: 129-31 (June, 1953); *cf.* B.I.P.C. 22: 770.

All the setup boxes which received first, second, and honorable-mention awards in the Association's 1953 competition are described and illustrated. Numerous illustrations. L.C.

SHIPPING CONTAINERS

DI FRANCO, F. R. The development of adhesives for the glued lap joint on fiber containers. Tappi 36, no. 5: 185-6A (May, 1953).

Some of the problems in the application of the adhesive, proper compression for the necessary length of time, and discharge of the units emerging from

the compressor are discussed. Several types of suitable resin adhesives are available in different colors; they are water-immersionproof, mold- and mildew-resistant, fast tacking, and possess the necessary properties for the required production speeds. E.S.

FIBRE BOX ASSOCIATION. Fibre box winners. Modern Packaging 26, no. 9: 118-19, 182, 185-6 (May, 1953); Am. Boxmaker 42, no. 5: 27-8, 30, 32, 34-5 (May, 1953); Fibre Containers 38, no. 5: 57-8, 61, 65-6, 70, 72-3 (May, 1953); Packaging Parade 21, no. 245: 53-4 (June, 1953).

The Association has distributed 72 prizes among 271 entries in the first annual fiber-box competition. Award winners in each of the 17 classes of competition are listed. Numerous illustrations. L.C.

HOFFMAN, ALFRED W. Glued lap joints on fiber containers. Tappi 36, no. 5: 187-9A; discussion: 189-90A (May, 1953).

The author compares boxes with glued-lap, stitched, and taped joints on the basis of price, performance as measured by laboratory tests, and inherent features which do not lend themselves to measurement. Glued-lap boxes, as well as those with other types of joints, have certain advantages and disadvantages; the box user should make his selection on the basis of his own particular packaging problems, whereas the boxmaker will be guided by overall economic factors. E.S.

JACOBS, CHARLES J. Some production problems encountered in the manufacture of glued lap corrugated boxes. Tappi 36, no. 5: 186-7A (May, 1953).

The proper handling of the adhesive before use, uniform application of the proper amount of room temperature, cleanliness of the glued-lap machine, and avoidance of rough handling of the glued boxes emerging from the machine are considered key points in obtaining trouble-free operation. Different types of board can be glued with the same adhesive but may require different amounts. E.S.

THOMPSON, RAY A. Machinery to manufacture glued lap joint-type containers. Tappi 36, no. 5: 182-5A (May, 1953); Fibre Containers 38, no. 3: 85-7 (March, 1953). [Abridgment]

Following a brief discussion of the development and acceptance under Rule 41 of the glued lap-joint container, a semiautomatic and fully automatic folding and gluing machine for their manufacture built by the Samuel M. Langston Co., Camden, N.J. are described. 6 illustrations. E.S.

WITCO CHEMICAL COMPANY and FIRESTONE TIRE & RUBBER COMPANY. In shipment . . . proper packaging assures safety of carbon black. Chem. Eng. News 31, no. 2: 192 (Jan. 12, 1953); Chem. Processing 16, no. 1: 104 (January, 1953); Chem. Week 72, no. 3: 52 (Jan. 17, 1953).

Instead of shipping carbon black to foreign destinations in paper bags, the material is now shipped in a rectangular fiberboard container which supports an inner 50-pound bag of compressed black. The compression of the black removes the air from the package and forms a briquet which also helps to support the package. If a puncture should happen, the material does not flow out of the rupture as it did when it was loosely packed in bags alone. 1 illustration in the last reference. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

J. M. HUBER CORPORATION and ST. REGIS PAPER COMPANY. Stable and compact loads result with recently designed bags. Chem. Processing 16, no. 2: 120-1 (February, 1953); Chem. Week 72, no. 3: 52 (Jan. 17, 1953); Packaging Parade 21, no. 244: 109 (May, 1953).

A new valve-type bag for channel blacks has been developed which results in more stable and compact loads which are easier to handle than bags formerly used. The new units provide a volume saving of 12%. 1 illustration. E.S..

SHIPPING CONTAINERS—PALLETIZING

OWEN, RAYMOND S. Palletizing problems of the boxmaker. Am. Boxmaker 42, no. 5: 13-14, 54 (May, 1953).

Five types of steel-strapped palletizing systems are useful to the boxmaker: returnable, unitized, and expendable pallets, the unitized load with separators, and the unitized load with runners. The author discusses the preparation of specifications, the planning and preparation of the load, and the determination of the cost of palletizing. A steel-strapped unit load is generally more expensive, but much more convenient, than delivery in bundles. L.C.

SODA ASH

ANON. Trona—soda ash. Chem. Eng. 60, no. 5: 118, 120 (May, 1953).

The mining, processing, and purification operations for the conversion of trona to soda ash at the new plant at Westvaco, Wyo. operated by the Westvaco Chemical Division of Food Machinery & Chemical Corp. for the Intermountain Chemical Co. are outlined briefly. 1 flowsheet and 2 illustrations. E.S.

SPECIFICATIONS

CARLILE, JOHN W. Try this approach to military "specs." Packaging Parade 21, no. 244: 52-3, 55 (May, 1953).

The history of military specifications for packaging methods and materials is traced, and the relationships between method and material specifications are described and tabulated. Because certain contracts awarded under old specifications are not yet completed, the correct specification for a given contract is not necessarily the one most recently published. The significance of the dates of issue of the qualified-products lists and the "invitation for bid" forms is explained. 3 tables. L.C.

STAINS AND STAINING

MOORE, ANNA T. Stains for the primary wall of the cotton fiber. Stain Technol. 28, no. 3: 149-54 (May, 1953).

Several methods are described for distinguishing between the primary wall of the cotton fiber and the other fiber components, such as the lumen and the secondary wall. The primary wall, a membrane less than 0.5μ thick covering the entire fiber, has been stained while still attached to the fiber, as well as after it has been mechanically stripped from the fiber. The stains include aqueous or alcoholic solutions of ruthenium red, methylene blue chloride, Nile blue sulfate, oil red, Sudan black B, iodine, and Simons' stain (*cf.* B.I.P.C. 20: 902-3). Various concentrations of sodium hydroxide

cupriethylenediamine hydroxide, or sulfuric acid have been used to enhance color changes and to cause cellulosic swelling. Fibers that have been stained with Simons' stain and then swelled with dilute cupriethylenediamine hydroxide have shown the greatest color differences between the primary wall and the lumen. 4 figures and 11 references. L.C.

STARCH

BADENHUIZEN, N. P. Swollen starch grains and osmotic cells. Experientia 9, no. 4: 136-8 (April, 1953). [In English; German summary] *cf.* B.I.P.C. 22:772.

The author refutes Meyer's and Frey-Wyssling's statements that the walls of swollen starch grains are semipermeable and can be compared with osmotic cells. Evidence is presented to show that the swelling and shrinkage of the vesicles under the influence of different substances is a consequence of colloid-chemical, structural changes in the membrane walls. 10 references. E.S.

STATISTICAL METHODS

NOBLE, CARL E. Statistical cost control in the paper industry. Ind. Quality Control 9, no. 6: 42-4, 46 (May, 1953).

The possibilities of statistical methods applied to cost control in the paper industry are discussed; these methods give a valuable insight into the biases and normal variations in the sampling and measuring systems. The control chart is recommended as a powerful aid in controlling and minimizing costs. An example for controlling waste in the conversion of paper rolls into sheets and another for determining the deviations in the number of container units per machine hour of production are included to describe methods for calculating tolerance and control limits. 2 tables and 2 diagrams. E.S.

ROSE, ARTHUR, SCHILK, JOAN A., and JOHNSON, R. CURTIS. Computers, statistics, and mathematics. Ind. Eng. Chem. 45, no. 5: 933-40 (May, 1953).

The authors discuss the more important recent literature references indicating the development of automatic computers, statistical methods, and mathematical techniques. 3 tables, 1 figure, and 227 references. E.S.

STEAM ACCUMULATORS

WILLIAMS, A. E. Storing thermal energy in paper mills. World's Paper Trade Rev. 139, no. 17: 1276, 1278, 1283 (April 23, 1953).

When boilers are operated over a wide range of ratings, their thermal efficiency is invariably reduced; with the installation of thermal storage equipment, fluctuations in the ratings are improved or eliminated and higher efficiencies result. In paper mills the storage of thermal energy may be accomplished in three different ways: by storing steam, preheated feed water, or preheated process water. Depending upon individual mill conditions, any of the three systems may offer the most economical means for providing a thermal balance between periods of relatively low steam demand and peak loads. Examples of conditions calling for the installation of any of the three systems are given. 1 table and 1 diagram. E.S.

STEAM POWER

COLDWELL, F. H. Paper mill expands for in-plant steam and tie-

line power. Power 97, no. 5: 86-8 (May, 1953); *cf.* B.I.P.C. 23: 507.

The power-plant expansion at the Nekoosa mill of the Nekoosa-Edwards Paper Co. is described, including a list of the principal new equipment. 4 illustrations. E.S.

STEAM TURBINES

KANIS, PAUL. High-pressure and high-temperature steam-turbine plants. Das Papier 7, no. 9/10: 164-6 (May, 1953). [In German; English and French summaries]

The construction of the Kanis-Roeder back-pressure, high-speed turbine operating with superheated steam, and its efficiency, applications, and limitations are described. These turbines are claimed to operate safely and economically even in the range of lower outputs, down to 500 kw.; they have been successfully applied to the direct drive of paper machines. 5 figures and 3 references. E.S.

SULFITE PROCESS—AMMONIA BASE

BOOTH, KENNETH G. Ammonia sulphite process. Pulp & Paper 26, no. 9: 80, 82, 84 (August, 1952); *cf.* B.I.P.C. 21: 806; 22: 205-6.

This is a summary of the experience obtained in the operation of the Lebanon, Ore. mill after its conversion from a calcium-base to an ammonia-base sulfite process. A description of the pilot plant for the recovery of heat and sulfur from the spent liquor and its operation during several months is included; this provided the necessary data for designing a full-scale plant which is now under construction at the Lebanon mill. 1 table and 1 flowsheet. E.S.

SULFITE WASTE LIQUOR

SCHOEDLER, KARL. Better utilization of spent spruce- and beechwood sulfite liquors by fermentation with butyl bacteria to acetone, butanol, and ethyl alcohol. Das Papier 7, no. 7/8: 133-5 (April, 1953). [In German] *cf.* B.I.P.C. 23: 585.

This gives essentially the same information as the previous reference, although more technical and economic data are included. 8 references. E.S.

SULPHITE PULP MANUFACTURERS' RESEARCH LEAGUE, INC. Sulphite Research League. Tappi 36, no. 5: 92A, 94A (May, 1953).

The present status of the League's research program is reviewed, including whole-liquor research (roadbinder, evaporation, burning, briquetting, and miscellaneous, such as agricultural uses, adhesives, and dispersants), sugar-fraction research, and lignin-fraction research. E.S.

SULFUR

ANON. Is there a sulfur shortage? Chem. Eng. News 31, no. 19: 1968-70 (May 11, 1953).

The economic factors, research findings, production modifications, and conservation measures which have contributed to the alleviation of the sulfur shortage are discussed. The Frasch sulfur potential of the United States and

Mexico is described, and the advisability of certain plants converting their processes to use "high-cost" sulfur is considered. The present market trends indicate that the price of sulfur will continue to rise slightly. 1 map and 2 graphs. L.C.

SURFACE PHENOMENA

BROUGHTON, GEOFFREY. Colloidal and surface phenomena. Ind. Eng. Chem. 45, no. 5: 912-32 (May, 1953).

A review of the literature of recent years up to and including 1952 is presented under the following captions: experimental methods (including surface-area and particle-size determinations); surface films; lyophobic colloids; aerosols; foams and emulsions; lyophilic colloids; soaps, micellar colloids, and solubilization; and polyelectrolytes. 912 references. E.S.

SWELLING AND HYDRATION

PRESTON, J. M., and NIMKAR, M. V. Moisture gradients in centrifuged samples. Textile Research J. 23, no. 1: 64-5 (January, 1953).

The authors discuss differences in the theoretical treatment of the role of capillary water in centrifuged fiber samples by Welo, Ziifle, and McDonald (*cf.* B.I.P.C. 22: 776) and by themselves (*cf.* J. Textile Inst. 43: T402-22 [1952]). 2 figures and 10 references. K.W.,Jr.

TAILINGS

OTTAR, HALDOR. Refiner studies in the groundwood industry. Part II. Refining experiments with the Asplund refiner and the Jones high-speed refiner. Norsk Skogind. 7, no. 4: 106-11 (April, 1953). [In Norwegian; English summary] *cf.* B.I.P.C. 23: 442.

The paper deals with the refining of groundwood rejects in the Asplund refiner (I) and the Jones high-speed refiner (II). The results obtained under various refining conditions in different mills are given. (I) seems to produce a good-quality pulp from the most different screenings, although with a relatively high power consumption. Concerning (II), a tendency for cutting the fibers was noted at the consistency range employed in the present study. Additional experiments are required to determine the suitability of the equipment for handling shredded bull-screen slivers or rejects. 12 figures and 3 references. E.S.

TALL OIL

POLLAK, ARTHUR. Tall oil . . . Soap Sanit. Chemicals 29, no. 5: 42-5, 81 (May, 1953).

The volume of tall oil used annually for soap is estimated at 50 million pounds. Tall oil soaps have good cleaning properties and are used in industrial laundries, for wool scouring, brown-bar laundry soaps, powdered or bead soaps, for cleaning and degreasing metals, and in emulsifiable disinfectants and insecticides. Representative formulas of the different soap types are given. 10 references. E.S.

TEXTILE INDUSTRY AND FABRICS—ELECTRICAL RESISTANCE

HEARLE, J. W. S. The electrical resistance of textile materials: I. The influence of moisture content. J. Textile Inst. 44, no. 4: T117-43 (April, 1953); *cf.* B.I.P.C. 22: 777.

The electrical resistance of 42 samples of textile fibers was measured at constant temperature and voltage, after a constant time, and 33-91% R.H. All the fibers (natural and synthetic) showed sigmoidal relations between log R_s (specific resistance of the fiber) and log M (moisture content) over a wide range. In general, protein fibers showed a higher resistance than cellulosic fibers at the same moisture content, and those cellulose fibers which absorbed the most water had the highest resistance at a given moisture content. It is emphasized that the electrolyte content has a great effect on the level of resistance. 2 tables, 29 figures, and 3 references. R.C.R.

HEARLE, J. W. S. The electrical resistance of textile materials: II. The effect of temperature. J. Textile Inst. 44, no. 4: T144-54 (April, 1953).

Measurements of the variation of resistance with temperature at constant moisture content are described. Limitation of time, and experimental difficulty (the method used was unsuitable for very high resistance) caused the tests to be limited to cotton, viscose rayon, wool, cellulose acetate, and silk over a range of moisture contents, and to ramie and nylon at single values of moisture content. The results are presented in diagrams. 11 figures and 2 references. R.C.R.

HEARLE, J. W. S. The electrical resistance of textile materials: III. Miscellaneous effects. J. Textile Inst. 44, no. 4: T155-76 (April, 1953).

During the investigation of the effect of moisture content at room temperature on the electrical resistance of textile fibers, measurements were made of the effects of the applied voltage, the time of application of the voltage, the nature of the electrodes, the tension in the specimen, and the form of the specimen on the resistance; the values of the back electromotive force present in the specimen after the application of a voltage were also measured. The results are presented in tables and diagrams. 6 tables, 25 figures, and 4 references. R.C.R.

HEARLE, J. W. S. The electrical resistance of textile materials: IV. Theory. J. Textile Inst. 44, no. 4: T177-98 (April, 1953).

The author presents a discussion of the theory underlying the experimental work of the three previous articles; *cf.* previous abstracts. 3 tables, 11 figures, and 25 references. R.C.R.

VISCOSITY

JOHNSON, E. F. Molecular transport properties of fluids. Ind. Eng. Chem. 45, no. 5: 902-7 (May, 1953).

The recent literature dealing with the molecular transport properties of viscosity, thermal conductivity, and diffusivity in single phases of fluids is reviewed. 126 references. E.S.

WASTE

BLOOM, L. J. A waste control program. Tappi 36, no. 5: 178-80A; discussion: 180-1A (May, 1953); Fibre Containers 38, no. 3: 81-3; discussion: 83-5 (March, 1953). [Abridgment]

The author describes the incentive plan for waste reduction in the different corrugating units and sheet-plant operations of the Hoerner Corp., including

a breakdown of the waste classifications, an analysis of noncontrollable and controllable waste, and the methods for calculating the wastage bonus. 1 reproduction of a monthly waste report. E.S.

FORGAC, JOHN P. Waste collection equipment. Tappi 36, no. 5: 177-8A (May, 1953); Fibre Containers 38, no. 3: 83 (March, 1953). [Abridgment]

Following a brief mention of the different methods of scrap disposal in general use, the author discusses the system which provides the various machines or groups of machines with large automatic pickup nozzles and conveys the torn or cut waste through discharge piping to the collector and baler. Different installations and their power requirements are described; the trend is toward fully mechanized and pneumatic scrap-removal systems. In their design, the following factors should receive consideration: type of plant; class of work done; type of material used; location, size, and type of each machine to be served; baling or processing of the scrap; importance of minimum power consumption or minimum first cost; the number and size of connections for each machine; and type and capacity of storage bin. E.S.

MAX, K. W. Résumé—TAPPI corrugated waste questionnaire. Tappi 36, no. 5: 175-7A (May, 1953); Fibre Containers 38, no. 3: 76, 81 (March, 1953). [Abridgment]

An analysis of the replies received at the time of writing is presented, including discussions on waste control and segregation in the industry. A list of suggested corrugated-waste definitions is appended. E.S.

WASTE PAPER

VERWAYEN, J. J. Waste paper stock cleaning and refining. Paper Mill News 76, no. 20: 46, 48, 50 (May 16, 1953); Fibre Containers 38, no. 4: 73, 75, 77 (April, 1953).

The waste-paper cleaning and refining system installed at the Gibraltar Corrugated Paper Co., North Bergen, N.J. to prepare stock for corrugating medium is described. It involves a Hydrapulper with a Murphy junk remover and ragger, Vortraps, Impco pulp screens with reject pumps, a Cowles defiberizer, a Shartle Selectrap, thickeners, a dump chest, Sutherland refiners, and Emerson jordans. 1 table and 7 figures. E.S.

WATER AND WATER TREATMENT

PULSOMETER ENGINEERING COMPANY, LTD., *Reading, England.* Water pollution; Lancashire paper mill solves difficulties. World's Paper Trade Rev. 139, no. 8: 570, 572 (Feb. 19, 1953).

A typical Pulsometer plant employing the ionometric process at a Lancashire paper mill making silverware wrapping paper is described briefly. The raw water from the river supplied to the plant is often dark brown in color and, in recent years, has become too polluted to permit the manufacture of high-grade papers. In the new installation, 3,000,000 gallons of water per day are treated in a dosing channel (nature of the special solution added is not disclosed) and a concentric reaction chamber in either of two conical settling towers; the clarified water is fed to gravity filters. Great economies in space requirements, time, and chemicals are claimed for the new process. 1 illustration and 1 diagram. E.S.

WATER-MARKS

ANON. The fascination of watermarks. Paper Making and Paper Selling 71, no. 4: 33-4 (Winter, 1952-53).

The origin of the symbolism of several early watermarks is discussed. L.C.

WOOD OPERATIONS

HAMILTON, M. S. M. Study of woods labour turnover. Pulp Paper Mag. Can. 54, no. 5: 156, 159-60; discussion: 160, 163 (April, 1953).

The Woodlands and Industrial Relations Sections of the Canadian Pulp and Paper Association appointed a committee in October, 1951 to investigate the cost and causes of woods-labor turnover. The activities of this committee are described, and the results of its program are evaluated. It has been established that short-term cutters substantially raise costs through lower production. 1 table. L.C.

WOOD ROOM

ANON. Wood in American sulfate mills. Papeterie 75, no. 3: 175, 177, 179, 181; no. 4: 253, 255, 257, 259, 261 (March, April, 1953). [In French]

The selection, transportation, and storage of wood in American sulfate mills in different parts of the country are reviewed, and barking methods and equipment, bark disposal, chippers, and chip handling are discussed. 3 tables and 41 references. E.S.

WOOD TRANSPORTATION

ANON. New type deep sea bundle raft. Pulp Paper Mag. Can. 54, no. 5: 138 (April, 1953).

A new type of flexible bundle raft for transporting logs in open water has been designed which rolls with the force of the water rather than resisting it. It is made up of approximately 124 bundles stowed seven to eight bundles wide and 16 bundles long; six feet of the raft ride under water. The construction proved to be sound when heavy seas were encountered during the first towing of the new rafts from Ocean Falls to Vancouver. 1 diagram. L.C.

WOOL

MERCER, E. H. Modification in the surface of wool fibres produced by chemical treatments: an electron-microscope study. Australian J. Appl. Sci. 4, no. 1: 107-17 (March, 1953).

Replicas of original and damaged fibers were prepared and compared under the electron microscope. Damage typical of the attack by halogens, sulfuryl chloride, and alkali is characterized; other materials examined include fibers treated with sulfuric acid, fibers coated with a polymer deposit, and fibers subjected to tryptic digestion. 10 figures and 21 references. E.S.

X-RAY RESEARCH

HESS, KURT. New developments in the xanthation of cellulosic fibers. Reyon, Zellwolle u. Chemiefasern 31, no. 4: 191-201 (April, 1953). [In German]

This paper deals principally with the xanthation of alkali cellulose. Changes in the x-ray diagram of Na-cellulose I during xanthation lead the author to the proposal that the xanthation is a true permutoid reaction but not stoichiometric in the technical process. The carbon disulfide as dithiocarbonate ion penetrates the stratification of the lattice to produce a separation with an increase of the distance between layers. A few data on the reaction of carbon oxysulfide with alkali cellulose are included. 1 table, 24 figures, and 3 references. K.W.,Jr.

X-RAY RESEARCH—SMALL-ANGLE SCATTERING

WARDROP, A. B. The low-angle scattering of x-rays by conifer tracheids. Textile Research J. 22, no. 4: 288-91 (April, 1952).

"Low"- and "wide"-angle diffraction diagrams of wood specimens from successive growth rings of a cross section of a stem of *Pinus taeda* L. were examined, and interpretations were made of features of the low-angle scattering diagrams of wood. 25 figures and 16 references. R.C.R.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record, *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets, or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ACID PLANT

HAGLUND, GUSTAF. Process for preparing raw sulfite acid. U. S. patent 2,637,627. Filed Aug. 5, 1947. Issued May 5, 1953. 4 claims. [Cl. 23-130]

A sulfur dioxide absorption apparatus for the continuous production of raw sulfite acid is claimed to be more economical of space than the conventional acid towers. Rotating disk devices are employed to achieve an intimate mixing of the gas with the lime suspension for the enrichment of the weak acid with sulfur dioxide. Gas from the producing system is first used to fortify bisulfite solution in the disk absorber, then the weak gas is conducted to a second absorber for the production of the bisulfite solution by mixing with a lime suspension. 1 figure. W.B.W.

ADHESIVES

CZARNECKI, JOHN D. Plasticized polyamides and method of preparation. U. S. patent 2,597,855. Filed Nov. 28, 1949. Issued May 27, 1952. 17 claims. Assigned to American Can Company. [Cl. 154-43]

A tough rubbery composition with excellent adhesive properties for bonding wood, fibers, metals, etc. can be prepared by blending 5-40% by weight of a N-alkoxymethyl polyamide and 60-95% of a plasticizer comprising 2,2-di-(4-hydroxy-propoxy-phenyl) propane. An infusible composition can also be prepared in the same manner that can be used as a solvent-resistant adhesive. R.C.R.

ALKALINE PROCESSES—ALKALI FREEZE

JONES, JOHN E., and STOTT, REGINALD R. Production of cellulose. U. S. patent 2,638,415. Filed Dec. 27, 1948. Issued May 12, 1953. 9 claims. Assigned to Celanese Corporation of America. [Cl. 92-11]

Cellulose is produced from raw lignocellulosic material (e.g., spruce, beech, or poplarwood pulp, or a bamboo or cereal-straw pulp) by impregnating the material with a 2-5% aqueous solution of caustic alkali, lowering the temperature until all the water present is frozen and keeping the temperature constant for one to five hours, raising the temperature to melt all the ice formed, removing the greater part of the alkali solution containing dissolved pentosans and then subjecting the material to a delignifying treatment. High-alpha pulps with a pentosan content of preferably below 3% can be treated in the above manner to yield cellulose suitable for conversion into cellulose esters (cellulose acetate) and ethers. R.C.R.

ALKALINE PROCESSES—RECOVERY

SINGLETON, JOHN C., JR. Apparatus for burning waste liquor. U. S. patent 2,636,813. Filed May 2, 1947. Issued April 28, 1953. 5 claims. Assigned to The Babcock & Wilcox Company. [Cl. 23-277]

A furnace with two or more discharge nozzles directed downward at such an angle that a combustion zone is maintained just above the hearth provides an efficient means of chemical and heat recovery from waste liquors (spent sulfite and black liquor, especially from the soda process). The atomizer nozzle is claimed to be nonplugging and so constructed that the materials are ejected in a horizontal flat spray. Regulation of air to the furnace and steam to the atomizer nozzles is employed to control the depth of the char on the hearth. The smelt is recovered continuously from the hearth in a molten state. 9 figures. W.B.W.

BARKERS AND BARKING

EKHOLM, ERIK, and HANER, VICTOR C. Wood debarking devices. Canadian patent 492,321. Filed Oct. 15, 1947. Issued April 21, 1953. 3 claims. Assigned to Puget Sound Pulp and Timber Co.

A mechanical barker handles logs to which limbs are still attached and barks the limbs as well as the logs. This is the same as U. S. patent 2,600,625 (June 17, 1952); *cf.* B.I.P.C. *22*: 867. 3 figures. W.B.W.

JOHNSON, LOUIS W., and SAUNDERS, WILLIAM G. Hand-guided and chain-driven bark-removing tool. U. S. patent 2,637,357. Filed Aug. 30, 1951. Issued May 5, 1953. 4 claims. Saunders' interest assigned to Johnson. [Cl. 144-208]

A log peeler is designed for use on logs with thick bark. Traction chains in the wedge-shaped head force the head under the bark. Power is provided by a motor mounted on the handle and transmitted to the operating head. 6 figures. W.B.W.

BOARD

HALLONQUIST, EARL G. Etherified lignocellulose, etherified lignocellulose containing products, and method of making the same. U. S. patent 2,635,968. Filed June 15, 1948. Issued April 21, 1953. 26 claims. Assigned to Plywood Research Foundation. [Cl. 106-200]

A partially etherified lignocellulose (I) from wood, straw, or bagasse and its preparation are claimed. The product is a partially thermoplastic material useful for molding, particularly panelboard and hardboard of improved water resistance. (I) is prepared by mixing finely ground raw lignocellulose

with an aqueous solution of a base and etherifying agent (aralkyl halides, alkyl halides, certain halogenated ethers, and alkyl sulfates) and heating to 90-150°C. As an example, 50 parts of Douglas-fir sawdust (20-40 mesh) is mixed with 50 parts of 50% (by weight) aqueous sodium hydroxide solution and cooled to 5°; 25 parts of ethyl chloride (at 0°) is added, the reaction vessel sealed, and the mixture heated to 110° for 30 minutes (maximum pressure of 195 p.s.i.). After cooling and dilution of the reaction mixture, it is acidified, washed with water, and dried. (I) is compatible with a large number of thermoplastic and thermosetting resins and, after mixing with a binder, can be molded by the application of heat and pressure. 1 figure. W.B.W.

HARRIS, GEORGE M. Composition of matter for making artificial lumber. U. S. patent 2,609,303. Filed Jan. 21, 1948. Issued Sept. 2, 1952. 2 claims. Assigned 50% to Harold A. Cook. [Cl. 106-163]

Water-repellent, fire-resistant artificial lumber can be formed by adding 12 parts of 40% formaldehyde solution to one to two parts of sulfuric acid and thoroughly mixing with 16 parts of starch; 128 parts of sawdust (wood waste or wood shavings) are kneaded into the mixture and the composition is molded to the desired thickness and shape. R.C.R.

MAGNANI, ALESSANDRO. Continuous manufacture of cement fibrous sheets. Canadian patent 492,685. Filed Nov. 14, 1947. Issued May 5, 1953. 12 claims. Assigned to F. L. Smidth & Co.

A method of manufacture of a fibrous sheet in continuous form on an endless belt is described. The fibrous cement mixture is deposited on the surface of the belt, compacted, and smoothed by rollers or other devices at the same time that excess water is removed through the belt by suction boxes which travel with it. Corrugated sheets may be formed by warping the web with rollers prior to deposition of the material and suitable smoothing rollers or blades for forming the sheet. 27 figures. W.B.W.

BOARD—SHEET FORMATION

SCHUBERT, DALE L., and DE MEERLEER, ALBERT H. Web or mat forming device. U. S. patent 2,635,301. Filed Sept. 30, 1948. Issued April 21, 1953. 3 claims. Assigned to Plywood Research Foundation. [Cl. 19-156]

A device for air formation of mechanically defibered lignocellulose materials such as straw, sugar cane, cornstalks, or wood fibers into a web or mat is claimed. The mat is formed on an endless belt or conveyor. A suitable binder of the thermosetting type such as phenol-aldehyde is admixed with the fiber. The formation of a mat five to eight inches thick of intermeshed or intertwined material is necessary for the production of a finished hardboard of approximately 0.25-inch thickness. 11 figures. W.B.W.

BOARD, ASBESTOS

BRADSHAW, LEONARD C. Fiberboard containing bitumen modified fatty acid pitch. U. S. patent 2,637,650. Filed May 6, 1952. Issued May 5, 1953. 3 claims. Assigned to International Bitumen Emulsions Limited. [Cl. 92-3]

This is a division of U. S. patent 2,602,029 (July 1, 1952); *cf.* B.I.P.C. 22: 954. An example of an emulsion used in the formation of the rigid nonflexible fiberboard (made from asbestos, papermaking fibers, etc.) com-

prises 100 parts (by weight) of vegetable-oil residue heated with 20 parts of zinc oxide for 30 minutes at 200°C., followed by the addition, with stirring, of Trinidad asphalt. The flux is cooled below 150°, and 18 parts of sulfur are stirred into the blend which is emulsified by adding 150 parts of the blend to 50 parts of water containing five parts of sodium metasilicate and one part of potassium hydroxide. The emulsion is finally diluted with hot water to a total out-turn of 300 parts. W.B.W.

BOARD, FIREPROOF

JUDA, WALTER, JONES, GRINNELL, and ALTMAN, NATHANIEL. Fire-retardant composition containing an anion exchange resin. U. S. patent 2,628,946. Filed May 22, 1946. Issued Feb. 17, 1953. 14 claims. Assigned to Albi Manufacturing Co. [Cl. 260-15]

The reaction products of basic nitrogen-containing anion exchange or acid-adsorbent resins with nonoxidizing inorganic acids (e.g., phosphoric acid) are termed "resin salts." Solutions of these salts sprayed on fiberboard give it a firmly adhering fire-retardant film, and resin salt solutions can also be used as adhesives to bond paper to paper, paper to wood, and wallpaper to insulation board. Dried resin salts can be dispersed in a liquid containing a film-forming bonding agent such as a cellulose derivative (e.g., ethylcellulose, cellulose acetate, etc.) and the solution sprayed or painted on combustible materials (e.g., wallboard, fiberboard, cardboard, plywood, fabrics, paper, etc.) to produce a fireproofed material. R.C.R.

BOARD, INSULATING

AIRTH, WILLIAM W. Acoustic tiles. Canadian patent 492,353. Filed June 3, 1946. Issued April 28, 1953. 12 claims.

This acoustic tile is made up of two layers. The base layer is composed of low-density fiberboard material provided with a system of deep grooves. The upper surface of the base layer is covered with a high-density material (such as linoleum) through which holes have been punched. These holes in the cover sheet are registered with the intersection of the deep grooves or channels in the base. Sound absorbing capacity is claimed to be improved with the added advantage of a dense surface of more pleasing appearance. 3 figures. W.B.W.

KJAER, VIGGO. Sound absorbent sheathing for walls and ceiling. Canadian patent 492,286. Filed May 27, 1946. Issued April 21, 1953. 8 claims. Assigned to Industria Osakeyhtiö.

A sound-absorbent sheathing for walls and ceilings of suitably perforated pulpboard, wallboard, plywood, metal, or the like has its reverse side covered with a paper or cloth of a porous nature. These panels are turned under at the edges for fastening to the wall surface. The enclosed space between the panels and the wall forms a resonator which is effective in dampening sound. 1 figure. W.B.W.

BOARD, LAMINATED

BAIN, WALTER M. Process for preparing laminated bodies of cellulosic materials and product. U. S. patent 2,637,675. Filed March 7, 1952. Issued May 5, 1953. 18 claims. Assigned to The Glidden Company. [Cl. 154-138]

A water-resistant laminated paperboard can be manufactured by applying to at least one surface of an alum-treated paper ply an aqueous film of quick-setting proteinaceous adhesive which has a total dispersed solids content of

10-61%, an alkaline pH and a composition comprising (*a*) finely divided solids, (*b*) dispersed protein (casein, soybean, etc.) and (*c*) water. The ratio of (*a*) to (*b*) is from 1:10 to 10:1 and the ratio of (*c*) to (*b*) is from 3:1 to 19:1. The adhesive film is applied sufficiently thick to bond the plies and sufficiently thin to be acidified to an acid pH by the acidity of the alum-treated ply. Paper and wood, paper and fabric, or paper and metallic foils (e.g., aluminum) may be laminated in this manner. R.C.R.

BOARD SPECIALTIES

DIEHL, PHILIP A. Utility case. U. S. patent 2,636,662. Filed Nov. 10, 1949. Issued April 28, 1953. 2 claims. Assigned to The Norwalk Paper Box Company. [Cl. 229-44]

With the addition of a handle and clasp, this case may be carried as a suitcase or briefcase. The base and the cover are each formed from a single piece of paperboard or fiberboard, folded in such a manner that the critical points of strain are thereby strengthened. A piano-type hinge, joining the lid to the base, is formed by folding alternate flaps of the cover and base about a piece of heavy wire. 6 figures. W.B.W.

EMPKIE, FREDERIC D., JR. Can carrier. U. S. patent 2,637,476. Filed Aug. 24, 1950. Issued May 5, 1953. 2 claims. Assigned to Container Corporation of America. [Cl. 224-45]

A portable can carrier of paperboard formed from a single die-cut blank is claimed in which the cans are held in a double row, separated by a medial partition. Tabs formed by folding a portion of the carrier body engage the top and bottom flanges of the end cans and prevent displacement. A carrying handle formed as part of the carrier may be folded flat for packaging multiple units into a larger container. 8 figures. W.B.W.

FORRER, HOMER W. Paperboard carrier. U. S. patent 2,637,480. Filed Oct. 2, 1950. Issued May 5, 1953. 6 claims. Assigned to Atlanta Paper Company. [Cl. 229-27]

A paperboard carrier of completely enclosed design, the cover of which lends itself to novelty arrangements such as the simulation of the roof of a house, is claimed. The central partition is an integral part of the container design. Additional compartments are provided by the introduction of slotted spacers locked in place by the medial flap. 9 figures. W.B.W.

HAUCK, WILLIAM E. Wire handled basket. U. S. patent 2,636,663. Filed Nov. 10, 1951. Issued April 28, 1953. 2 claims. Assigned to Inland Container Corporation. [Cl. 229-52]

This invention relates to the mode of attachment of a wire handle to small corrugated-board baskets commonly used for handling fruits and vegetables. The object is the provision of an easily attachable bail without use of tools after the basket is packed. A "T" shaped section is formed at each end of the handle, and this section is inserted through a slot into the double wall of the basket. The handle may be retracted into the basket for stacking or raised for carrying. 6 figures. W.B.W.

KILMARTIN, JOHN A. Containers for cans. Canadian patent 491,801. Filed March 2, 1951. Issued April 7, 1953. 7 claims.

A portable container for cans is formed from a single piece of lightweight boxboard. Each can is held by two panels and a strut in such a position that

the label is readily visible. The carrier may be machine loaded by temporary circular distortion. 5 figures. W.B.W.

MARTIN, RONALD H. Carton adaptable for conversion to toys. U. S. patent 2,636,312. Filed Feb. 24, 1949. Issued April 28, 1953. 3 claims. [Cl. 46-11]

A phonograph record container which may be converted to a toy for mounting on a phonograph turntable is described. The converted paperboard carton, suitably printed and assembled, resembles a merry-go-round. 10 figures. W.B.W.

OLSEN, MALVIN H. Book matches with ejection-type ignition means therefor. U. S. patent 2,638,208. Filed July 12, 1951. Issued May 12, 1953. 5 claims. [Cl. 206-34]

This disposable cardboard match packet consists of a magazine from which the match is ejected with the thumb, the match being lighted in the ejection process by opposing abrasive coated surfaces. Space is provided within the packet for disposal of the spent matches. 9 figures. W.B.W.

SHANK, CLARENCE S. Combination ice cream carton and toy. U. S. patent 2,636,313. Filed June 10, 1950. Issued April 28, 1953. 5 claims. Assigned 50% to Robert Critchfield. [Cl. 46-11]

An ice-cream carton blank printed with the designs for three-dimensional toy buildings provides maximum utilization of the carton. The cut-out and score marks are printed on the carton during the usual printing operation. 9 figures. W.B.W.

SPARKS, GEORGE C. Display box for decorated Easter eggs. U. S. patent 2,638,210. Filed Oct. 20, 1949. Issued May 12, 1953. 1 claim. [Cl. 206-45.14]

This carton is equipped with slotted flaps in the end walls to hold the decorated Easter eggs firmly and out of contact with the carton walls. A transparent window in the top and side panels provides an unobstructed view of the contents. The carton is provided with a retractable handle. 5 figures. W.B.W.

STAHL, WILLIAM F. Preparation of impregnated laminated tubes. U. S. patent 2,637,674. Filed Aug. 31, 1946. Issued May 5, 1953. 4 claims. [Cl. 154-83]

Paper strips impregnated with a thermosetting resin (e.g., phenol-formaldehyde) are wound on a mandrel to form a tube and then subjected to high-frequency current of sufficient intensity to cause resin flow. A die passes over the exterior of the tube at this point applying pressure, thereby forming a union between the resin on the paper strips. 3 figures. W.B.W.

BOARD TESTING—PHYSICAL

MCKEE, ROBERT C., and SEARS, GEORGE R. Method and apparatus for testing paperboard. U. S. patent 2,637,996. Filed Sept. 9, 1948. Issued May 12, 1953. 6 claims. Assigned to The Institute of Paper Chemistry. [Cl. 73-96]

Tearing resistance of paperboard or corrugated board is determined by

clamping a test specimen between a movable and rotatable jaw. Before clamping, the specimen is cut at opposite edges so that continued rather than initial tear resistance is measured. Energy is applied to the rotatable jaw by a pendulum arm to which is fixed a graduated quadrant. When the pendulum is released, the rotating jaw imparts a twisting motion to the specimen to continue the tear from the cut edges. Upon completion of the pendulum travel, it is returned to its original position, and the energy loss as compared with the free-swinging pendulum is read by a "lazy arm" indicator on the graduated quadrant. It is claimed that reproducible results are obtainable with this instrument. 7 figures. W.B.W.

DISPENSING CONTAINERS

HOUGH, CASS S., WESLEY, ROBERT O., SCALINGI, CIRO R., and GAEKE, LEE B. Container and dispenser for strip material. Canadian patent 492,584. Filed April 8, 1949. Issued May 5, 1953. 9 claims. Assigned to Daisy Manufacturing Company.

A container and dispenser for air-rifle shot embodies a continuous strip of interconnected, flat tube-type packages of shot. This is the same as U. S. patent 2,574,565 (Nov. 13, 1951); *cf.* B.I.P.C. 22: 294. 7 figures. W.B.W.

SPURR, WINFRED F. Label package and dispenser. U. S. patent 2,638,211. Filed July 10, 1951. Issued May 12, 1953. 3 claims. Assigned to Ace Art Company. [Cl. 206-57]

This cardboard label dispenser consists of a box with a slotted top or end and fitted with a spring arrangement in the bottom of the carton which is formed from a piece of the carton blank folded in an accordion fashion. 11 figures. W.B.W.

WILLIS, CECIL H., and WILLIAMS, RONALD. Dispensing carton. U. S. patent 2,636,599. Filed Sept. 10, 1951. Issued April 28, 1953. 9 claims. Assigned to Kalamazoo Vegetable Parchment Co. [Cl. 206-57]

A false bottom is provided in a carton for dispensing tissue or other sheet material. After a portion of the contents has been withdrawn, supporting struts (formed from the bottom of the carton by fracture lines) are employed to support the false bottom, thereby raising the contents to a more accessible position. 11 figures. W.B.W.

DRYING—PAPER

LABARGE, LEE J. Treatment of fibrous material. Canadian patent 491,968. Filed March 9, 1948. Issued April 14, 1953. 4 claims.

This patent involves the drier section of a paper machine with the object of producing a more uniformly dried web. The modification of the last six or eight drier rolls to hot-air rather than the conventional steam heat is claimed to accomplish uniform drying of the paper web. 2 figures. W.B.W.

FOLDING BOXES

BRODERICK, FRANK W. One-piece covered container. U. S. patent

2,637,482. Filed July 15, 1950. Issued May 5, 1953. 7 claims. Assigned to Berles Carton Company. [Cl. 229-30]

This carton permits visual inspection of the contents such as globular fruits and vegetables. The tray and lid are stamped from one piece of cardboard. Pliofilm may be used to cover the window opening on the lid, or the lid may be perforated with a series of diamond-shaped openings to allow inspection. 12 figures. W.B.W.

COX, JOHN W. Egg carton. U. S. patent 2,636,661. Filed April 15, 1949. Issued April 28, 1953. 5 claims. Assigned to Shellmar Products Corporation. [Cl. 229-28]

A foldable paperboard setup-type egg carton of greater crush resistance than previous cartons is claimed. Cross partitions are hinged to the front and rear walls of the carton and braced by the cushion-forming bottom (I) in a longitudinal direction. The grain of the paperboard from which these partitions are formed should run in the horizontal plane, so that the (I) prevents buckling about an axis parallel to the grain. 8 figures. W.B.W.

MULNIX, ERSEL C. Carton. U. S. patent 2,638,262. Filed June 18, 1949. Issued May 12, 1953. 6 claims. [Cl. 229-39]

This fiberboard carton has a gabled-roof structure and an integral handle. After the initial gluing operation, it is easily set up and effectively locked in the closed position. 7 figures. W.B.W.

SHAPIRO, DAVID H. Folded blank box. U. S. patent 2,637,483. Filed July 28, 1951. Issued May 5, 1953. 3 claims. [Cl. 229-31]

A box which may be easily set up with automatic box-blank, folding, and gluing machines without staples or metal stitching is claimed; it may likewise be collapsed very simply and without damage to the boxboard. 7 figures. W.B.W.

GUMS AND RESINS

GAVER, KENNETH M., LASURE, ESTHER P., and THOMAS, LEVI M. Carbohydrate products and processes. Canadian patent 492,470. Filed July 11, 1952. Issued April 28, 1953. 13 claims. Assigned to The Ohio State University Research Foundation.

Heteropolysaccharides (e.g., guar, locust bean, or karaya gum, and gum arabic) mixed and heated at 80-115°C. with an alkali metal hydroxide in a nonaqueous solvent (e.g., butanol) yield monoalkali mixed saccharides (compounds of alkalies with sugars) which can be reacted with either an inorganic metal salt to produce 2-mono inorganic mixed saccharides or an organic reactant (ethylene chlorohydrin) to produce 2-mono organic mixed saccharides. The products are useful as adhesives, sizing materials, gel-producing materials, and as intermediates in the formation of synthetic plastics. 1 figure. R.C.R.

INTERIOR PACKING

ROBERTSON, FRED O. Package of flat articles with adjustable filler pad. U. S. patent 2,638,212. Filed Dec. 3, 1951. Issued May 12, 1953. 2 claims. Assigned to Borg-Warner Corporation. [Cl. 206-65]

A method for packaging long flat articles (e.g., handsaws) in standard-size boxes is outlined. When these articles are shorter than the box, a corrugated flap is inserted between the ends of the saws; this flap is folded in a zig-zag manner so that each pair of saws becomes a single item that occupies the full length of the box. A sleeve type cover is placed on each item to prevent damage in shipment. 5 figures. W.B.W.

LIGNIN

BALON, WALTER J. Water-soluble derivatives of unsulfonated lignin. U. S. patent 2,600,606. Filed May 25, 1950. Issued June 17, 1952. 8 claims. Assigned to E. I. du Pont de Nemours and Company. [Cl. 260-124]

Water-soluble derivatives of lignin of excellent tanning quality are obtained by reacting lignin (obtained from the sulfate or soda pulp process or agricultural residues) with boric acid and phenols, preferably polyphenols (e.g., resorcinol, hydroquinone, phloroglucinol, etc.), followed by neutralization with an alkali (sodium hydroxide); 84 parts (by weight) of alkali lignin and 200 parts of resorcinol are mixed and heated to 95-100°C. until a clear melt is obtained; 124 parts of boric acid are added over a period of 15 minutes at 110-18° and the reaction mass is heated in 30 minutes to 146° and maintained there for two hours under reflux, after which it is made strongly alkaline with 370 parts of 30% sodium hydroxide solution and dissolved in 2600 parts of water. The product is precipitated by filtering and acidifying with sulfuric acid to an end point with Congo red paper. Tested as a tanning agent on sheepskin, the light brown powder gives a leather possessing good fullness, feel, and appearance. R.C.R.

KAHANE, LUCIEN. Process of treatment of ligneous materials. Canadian patent 492,304. Filed Feb. 7, 1951. Issued April 21, 1953. 19 claims. Assigned to Laboratoire de Recherches et de Control du Caoutchouc et de l'Amiante. [In French]

Resin formation is engendered by refluxing finely divided ligneous materials (such as wood, cork, or peat) suspended in aqueous ammonium hydroxide with aldehydes (such as formaldehyde, acetaldehyde, or furfural) thus causing a condensation between the reactants. This is followed by acidification (to pH 3-5), realkalinization, and further heating. Subsequently phenolic substances may also be added and condensed both with the lignin and residual aldehyde, thus accentuating resin formation. The products may be used in molding powders, plastics, adhesives, veneers, etc. L.E.W.

MACHINERY—CALENDERS

BIRSE, JAMES. Means for feeding lengths of material between series of rollers. U. S. patent 2,635,872. Filed April 10, 1950. Issued April 21, 1953. 3 claims. [Cl. 271-2.3]

Hand feeding of material between a series of rollers (as in a calender stack) is eliminated by arranging an endless-feed belt unit and pulleys on the intake side of each pair of adjacent rollers. A swivel guide roller in front of the leading pulley inserts the end of the material. 2 figures. W.B.W.

BORDEN, GEORGE C., JR. Method of producing supercalendered plasticized glassine paper. U. S. patent 2,636,833. Filed Nov. 7, 1952. Issued April 28, 1953. 3 claims. Assigned to Riegel Paper Corporation. [Cl. 117-65]

Invert sugars applied to supercalendered glassine as plasticizing agents tend to carmelize if wound in the roll while hot. The critical temperature for such carmelization is about 140°F. A blast of cooled air or the use of cooled rolls on the calender to reduce the paper below the critical temperature prior to winding on the reel is the object of this invention. 2 figures. W.B.W.

MACHINERY—CARTON-FEEDING MECHANISM

LEWIS, ARTHUR J. Method and means for feeding blanks. U. S. patent 2,636,733. Filed Sept. 20, 1948. Issued April 28, 1953. 17 claims. Assigned 50% to Ex-Cell-O Corporation and 50% to a group comprising Ace C. Fessenden and Ace Carton Corporation. [Cl. 271-23]

A feed mechanism is described for the removal of carton blanks from the bottom of a pile. Picker fingers on opposite sides of the pile engage the bottom blank which is bent downward and separated from the pile. Satisfactory feeding of even damaged or defective blanks is claimed. 7 figures. W.B.W.

MACHINERY—CHIPPERS

FLATEBOE, EINAR I. Rechipper with vibrating trough. U. S. patent 2,582,537. Filed Oct. 17, 1949. Issued Jan. 15, 1952. 6 claims. [Cl. 241-92]

A V-shaped vibrating trough conducts the material to the rechipper knives; a preferential alignment of the compacted slivers with their long axis at right angles to the chipper knives is claimed from this arrangement, which results in a larger percentage of acceptable chips. 11 figures. W.B.W.

FLATEBOE, EINAR I. Rechipper with vibrating trough. U. S. reissue patent 23,650. Filed Nov. 3, 1952. Issued May 5, 1953. 10 claims. Assigned to Sumner Iron Works. [Cl. 241-92]

This is a continuation of U. S. patent 2,582,537 (*cf.* abstract above). Additional claims describe the vibrating feed trough, the means for vibrating same, and the automatic feeding effect imparted by the vibrating hopper. 11 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

CUNNINGHAM, DONALD F. Machine for making partitions. U. S. patent 2,636,423. Filed March 24, 1948. Issued April 28, 1953. 20 claims. Assigned to American Partition Corporation. [Cl. 93-97]

A machine which makes container partitions for such items as bottle cells from paper, chipboard, cardboard, and the like is described. The sheet material is cut into ribbons and slotted, then assembled into the completed partition; the machine is adjustable for making partitions of different dimensions. 18 figures. W.B.W.

GRANT, FRANK A. Apparatus and method for attaching handles to bags. U. S. patent 2,635,510. Filed July 19, 1947. Issued April 21, 1953. 19 claims. Assigned to Paper Strap, Inc. [Cl. 93-8]

A machine for attaching strap handles to paper bags, cartons, and the like is claimed. The straps are cut from a continuous strip of paper to predetermined lengths, folded, coated with adhesive at each end, and attached to the bag ends. 14 figures. W.B.W.

HARKER, CHARLES B. Machine for making fibrous boxes. U. S. patent 2,635,512. Filed Jan. 31, 1951. Issued April 21, 1953. 19 claims. Assigned to Clybourn Machine Corporation. [Cl. 93-37]

The machine is designed to form continuously and automatically fibrous boxes from die-cut blanks. The boxes have no metal fasteners and the edges and corners are well defined, providing strength in the box structures. 28 figures. W.B.W.

POTDEVIN, ADOLPH. Apparatus for making sacks. U. S. patent 2,635,511. Filed April 27, 1948. Issued April 21, 1953. 12 claims. Assigned to Potdevin Machine Company. [Cl. 93-23]

A machine for making paper sacks consisting of a paper body and a chipboard bottom is claimed. The sacks are produced in a flattened condition for convenience in transporting. 25 figures. W.B.W.

MACHINERY—CUTTERS

ROSENTHAL, HARRY. Sheet material cutting machine. Canadian patent 491,940. Filed June 3, 1949. Issued April 7, 1953. 12 claims.

A machine for the automatic cutting of various lengths of sheet material for wrapping purposes is claimed. The selection of the length of paper to be delivered is controlled by the operator and involves a timer which does not require an initial setting movement. 6 figures. W.B.W.

SHAW, JAMES M., and FAUS, LESLIE I. Automatic paper cutting machine. Canadian patent 491,939. Filed Jan. 13, 1949. Issued April 7, 1953. 20 claims. Assigned to Harry Rosenthal.

This is the same as U. S. patent 2,629,440 (Feb. 24, 1953); *cf.* B.I.P.C. 23: 602-3. 6 figures. W.B.W.

MACHINERY—FELTS

BERGLUND, ORION W. Felts for paper making machinery or the like. Canadian patent 492,471. Filed March 18, 1947. Issued April 28, 1953. 5 claims. Assigned to The Orr Felt & Blanket Company.

An abrasion-resistant papermaking felt is claimed which exhibits a high degree of wettability and a low wetting time. It comprises a dimensionally stable woven-wool base which is impregnated with 5-15% by weight of urea- or phenol-formaldehyde resin, and a superimposed layer of synthetic rubber. This corresponds to U. S. patent 2,567,097 (Sept. 4, 1951); *cf.* B.I.P.C. 22: 150. W.B.W.

MACHINERY—PACKAGING MACHINERY

LANGDON, SAMUEL W. Boxmaking machine. U. S. patent 2,604,828. Filed Jan. 22, 1949. Issued July 29, 1952. 6 claims. Assigned 50% to Harold J. Nagle and 50% to Reginald A. Nagle. [Cl. 93-54.2]

A machine for forming boxes from unstayed blanks operates automatically with a wrapping machine; it feeds a blank and wrapper assembly, grips and holds them on the form block, and ejects the finished, wrapped box from the machine. 7 figures. R.C.R.

LIPPMANN, ARTHUR W., and LIPPMANN, EDMUND E. Flap

opener for cartons. U. S. patent 2,637,958. Filed July 31, 1951. Issued May 12, 1953. 3 claims. Assigned to Lippmann Engineering Works. [Cl. 53-24]

The purpose of this device is to open and to hold open the flaps of a carton before and during the filling operation. As the carton approaches the filling station, the flaps are engaged by a shoe connected to spreader rails. These rails insure that the flaps are held back while the filling operation is in progress. 4 figures. W.B.W.

SUTTON, JAMES M. Package wrapping apparatus. U. S. patent 2,637,961. Filed Nov. 1, 1949. Issued May 12, 1953. 17 claims. [Cl. 53-149]

This apparatus is designed to perform only that part of package wrapping concerned with the end closure of the overwrap. A suitable heat-sealable overwrap such as cellophane is applied to the package before delivery to this machine. As the package advances through the machine, a series of platelike elements cause the ends of the overwrap to be folded in a prescribed manner. A heating element is applied to both ends and the bottom overlap as a final sealing operation. 22 figures. W.B.W.

MACHINERY—PASTING MACHINE

FARRELL, ROBERT A., MUELLER, WILLIAM G., and BARTES, AUGUST, JR. Apparatus for making sealed packages. Canadian patent 491,885. Filed Sept. 25, 1952. Issued April 7, 1953. 11 claims. Assigned to Marathon Corporation.

This is the same as U. S. patent 2,615,377 (Oct. 28, 1952); *cf.* B.I.P.C. 23: 295. 40 figures. W.B.W.

MACHINERY—ROLLS

HORNBOSTEL, LLOYD. Diaphragm control for press roll assemblies. U. S. patent 2,638,819. Filed March 18, 1948. Issued May 19, 1953. 6 claims. Assigned to Beloit Iron Works. [Cl. 92-49]

A fluid-pressure controlled mechanism for regulating the nip pressure in a roll assembly (particularly a press-roll assembly used in papermaking) is claimed through which uniform pressure is applied at both roll ends. When such pressure is applied through a system of diaphragms, nonuniform distortion of two interconnected diaphragms may result in unequal pressures. A means of adjustment is incorporated in the mechanism through a mechanical linkage to balance diaphragm deflection. 5 figures. W.B.W.

MACHINERY—SCREENS

JOHNSON, VICTOR. Paper pulp screen plates and support means for the same. U. S. patent 2,588,533. Filed Nov. 29, 1946. Issued March 11, 1952. 6 claims. [Cl. 92-30]

Screen plates (I) are provided which have a number of oblong slots whose areas are minimal at the top of the plates and gradually increase toward the bottom, enhancing the flow of pulp through the slots and inhibiting clogging. (I) are clamped to support members by vertically reciprocable followers (mounted in housings in the frame) which coact with oscillatable clamps secured to the followers by a fixed pin and coacting elongated slot. 8 figures. R.C.R.

MACHINERY—SHEET-FEEDING MECHANISM

THOMPSON, ROBERT J. Sheet feeding mechanism. U. S. patent 2,635,695. Filed June 9, 1947. Issued April 21, 1953. 25 claims. Assigned to The W. O. Hickok Mfg. Co. [Cl. 164-87]

The machine claimed gathers a predetermined number of sheets, registers the assembled pack, and then feeds it through a perforator. 10 figures. W.B.W.

MACHINERY—SLICE

TEALE, BENJAMIN E. Papermaking apparatus. U. S. patent 2,637,250. Filed June 21, 1950. Issued May 5, 1953. 3 claims. [Cl. 92-44]

The slice construction described for use with a Fourdrinier paper machine employs tranversely spaced elongated horizontal side plates and features adjustability so that it may be positioned as desired relative to the headbox. Rigidity of construction is provided so that the free edge of the slice plate may be adjusted relative to the Fourdrinier wire. 3 figures. W.B.W.

MACHINERY—SULFUR BURNERS

HOUSTON, GAINES N. Method of burning sulfur. U. S. patent 2,637,630. Filed July 6, 1948. Issued May 5, 1953. 3 claims. Assigned to Mathieson Chemical Corporation. [Cl. 23-179]

The production of very pure sulfur dioxide and vapor-phase sulfur from commercial-grade sulfur is claimed. This is accomplished by a recycling system which removes molten sulfur from the burner, passes it through a filter to remove the organic and inorganic impurities, and then feeds it back to the burner. Only a small part of the molten sulfur in the burner at a given time is passed through the filter system. 1 figure. W.B.W.

MACHINERY—WEB-FEEDING MECHANISM

EATON, LEWIS B. Web feeding means for container forming apparatus. U. S. patent 2,636,730. Filed March 30, 1948. Issued April 28, 1953. 9 claims. Assigned to Pneumatic Scale Corporation, Limited. [Cl. 271-2.6]

A machine (in duplex form) for packaging with heat-sealable printed paper (i.e., tea-bagging) from a continuous web is described. As the web advances, it is folded to form a double package, filled and sealed, then severed. A detecting element, actuated by a printed registration mark, is incorporated to hold spacing of the individual packages within predetermined limits. 10 figures. W.B.W.

HOWARD, STANLEY R. Web feeding method and means for container forming apparatus. U. S. patent 2,636,732. Filed March 30, 1948. Issued April 28, 1953. 16 claims. Assigned to Pneumatic Scale Corporation, Limited. [Cl. 271-2.6]

This is similar to U. S. patent 2,636,730 granted to Eaton, Lewis B. (*cf.* abstract above). The web-feed control mechanism is designed to advance the web a distance slightly less than the normal bag length. When intentional shortening has reached a predetermined limit, the registration device is actuated and the web is advanced an additional amount to compensate for the shortened bag. 7 figures. W.B.W.

HOWARD, STANLEY R. Web feeding means for container forming apparatus. U. S. patent 2,636,731. Filed March 30, 1948. Issued April 28, 1953. 14 claims. Assigned to Pneumatic Scale Corporation, Limited. [Cl. 271-2.6]

This is similar to U. S. patent 2,636,730 granted to Eaton, Lewis B. (*cf.* abstract above). Web control during bag formation and filling in this device is accomplished by advancing the web slightly beyond the desired point, then retracting the web until the printed indicia register with the control mechanism. 7 figures. W.B.W.

KNOWLTON, CUTLER D. Apparatus for feeding webs. U. S. patent 2,638,037. Filed Aug. 29, 1947. Issued May 12, 1953. 11 claims. Assigned to Hoague-Sprague Corporation. [Cl. 93-36.6]

To allow for possible shrinkage or stretching in a web of preprinted cover paper it is recommended that the space between successive designs on the web be slightly greater than the greatest anticipated shrinkage in the paper. A set of rolls, controlled by a photoelectric cell, makes a wider or more narrow plait or fold in the web at the point of severing to compensate for dimensional changes after printing. By this means, the design is maintained in the proper relationship to the severed sheets. 11 figures. W.B.W.

MATERIALS HANDLING

BACKOFEN, E. RYAN, and GUNNING, ALFRED W. Paper roll handling mechanism. U. S. patent 2,635,774. Filed June 23, 1949. Issued April 21, 1953. 9 claims. Assigned to Clark Equipment Company. [Cl. 214-652]

A lift truck is equipped with a rotatable paper roll handling mechanism, which can be rotated 90° so that rolls may be stacked vertically or horizontally. 7 figures. W.B.W.

MOLDED PULP ARTICLES

BROWN, LILE H. Molded pulp carton. U. S. patent 2,636,660. Filed March 24, 1947. Issued April 28, 1953. 3 claims. Assigned to Shellmar Products Corporation. [Cl. 229-15]

The double rows of cells in this molded pulp egg carton are in a staggered relationship to each other. Such an arrangement provides ample room in the lid for large eggs and still allows the use of sloping side walls in the molding process. 3 figures. W.B.W.

COX, JOHN W. Egg carton. U. S. patent 2,637,479. Filed March 28, 1947. Issued May 5, 1953. 1 claim. Assigned to Shellmar Products Corporation. [Cl. 229-2.5]

A molded-pulp egg carton features a cover of greater capacity than the base. The molding of gussets into the corners of the cover allows the sides of the top to assume vertical or practically vertical positions. Such an arrangement is claimed to permit the molding of the carton in one piece without the disadvantages usually found in such cartons. 22 figures. W.B.W.

PIERSON, GEORGES. Pulp molding apparatus having a forming device and a spring-actuated flexible permeable structure. U. S.

patent 2,636,422. Filed Aug. 6, 1947. Issued April 28, 1953. 3 claims. [Cl. 92-57]

An apparatus for forming articles from molded pulp consists of a spring-activated, flexible, permeable form which may be collapsed after the article is molded to facilitate the stripping of the mold from the damp rough. 14 figures. W.B.W.

SCHWERTFEGER, WALTER J. Molded pulp container. Canadian patent 492,067. Filed Dec. 29, 1950. Issued April 14, 1953. 6 claims. Assigned to Keyes Fibre Company.

A molded-pulp egg carton is claimed. This is the same as U. S. patent 2,591,471 (April 1, 1952); *cf.* B.I.P.C. 22: 714. 6 figures. W.B.W.

PACKAGING

ADAMS, CARL, SR. Display carton for fruits and vegetables. U. S. patent 2,637,481. Filed July 5, 1949. Issued May 5, 1953. 3 claims. [Cl. 229-30]

This display carton is essentially an elongated tray having an opening in the bottom formed by a slit. Free ends of the flaps formed by this slit are turned to support the tomatoes or the like in the carton. An outer wrapping of transparent film (cellophane) completely encloses the carton and its contents; portions of the overlapped edges of the film are left unsealed to provide ventilation through the bottom opening. 5 figures. W.B.W.

BANKS, MILLARD S. Soap package. U. S. patent 2,637,439. Filed Feb. 16, 1949. Issued May 5, 1953. 1 claim. [Cl. 206-47]

A package that contains sufficient soap product for a single use is designed for vending-machine distribution along with a disposable towel. The lightly bonded soap particles in the disintegrable paper wrapper dissolve instantaneously in water. The soap cartridge is included within the folds of the paper towel for protection of the package and to simplify vending. 3 figures. W.B.W.

BARNES, MARSHALL C. Method of packaging empty bags. Canadian patent 492,001. Filed April 14, 1950. Issued April 14, 1953. 8 claims. Assigned to Bemis Bro. Bag Company.

A method of assembling paper or fabric bags into units is described, as well as the further assembly of these units into bales or pallet loads for shipment. Increased ease of handling for the user is one advantage claimed for the system. 15 figures. W.B.W.

POOLE, WILLIAM J. Frozen food carton with plastic lid. U. S. patent 2,638,261. Filed May 10, 1948. Issued May 12, 1953. 6 claims. Assigned to Container Corporation of America. [Cl. 229-5.5]

A transparent plastic lid forms a wedgelike, liquidtight seal with the upper edge of the re-usable, waxed-paperboard carton. This is the same as Canadian patent 483,573 (May 27, 1952); *cf.* B.I.P.C. 22: 879. 5 figures. R.C.R.

PAPER—COATED

PARKER, EARL E. Stabilization of polymerizable unsaturated

dicarboxylic acid polyesters and mixtures thereof with vinylic monomers. U. S. patent 2,593,787. Filed March 30, 1951. Issued April 22, 1952. 26 claims. Assigned to Pittsburgh Plate Glass Company. [Cl. 260-45.4]

Addition of 0.01-2% of salts of quaternary ammonium hydroxide to the mixtures (I) of polyesters of dihydric alcohols (e.g., propylene, diethylene glycol), α,β-ethylenically unsaturated dicarboxylic acids (II) (e.g., maleic, fumaric) and vinyl polymer (e.g., styrene) acts to stabilize (I) and prevent gelling during storage. (I) is cured with 0.01-5% of a peroxide and can be modified with fillers (cellulose fibers, asbestos, etc.) and plasticizers (e.g., dimethyl phthalate) and used for wood, paper, textile, and metal coatings. (II) can be partly replaced by saturated acids. R.C.R.

PAPER SPECIALTIES

ABRAMSON, ELMER D. Haystack cover. U. S. patent 2,635,562. Filed March 13, 1950. Issued April 21, 1953. 6 claims. Assigned to Central States Paper & Bag Company. [Cl. 108-3]

Two plies of high tensile-strength paper stock (e.g., kraft), secured together by a layer of asphaltic adhesive comprise a tarpaulin-like haystack cover. The paper is waterproofed and contains suitably spaced eyelets for use with hold-down ropes. 9 figures. W.B.W.

BENIGNUS, PAUL G. Fungicidal composition and process of using same. U. S. patent 2,637,661. Filed March 28, 1945. Issued May 5, 1953. 3 claims. Assigned to Monsanto Chemical Company. [Cl. 117-103]

Textiles, cordage, paper, wood, etc. are protected from attack by fungi and mold by impregnating them with an aqueous solution containing copper-, cadmium-, or zinc-ammonium ions, a water-soluble pentachlorophenate in the presence of a water-miscible organic solvent for the metal pentachlorophenate, and an alkylated methylol compound of melamine or urea. The impregnated materials are dried and heated to resinify the amine derivatives. R.C.R.

BIGLEY, MILES G. Process of coating. U. S. patent 2,637,660. Filed Dec. 20, 1945. Issued May 5, 1953. 4 claims. Assigned to Koppers Company, Inc. [Cl. 117-66]

A process for and the equipment for saturating building paper with coke-oven tar containing naphthalene is described. The maintenance of temperatures above 60°F. after withdrawal from the tar bath is claimed to result in better saturation of the felt. The hood and exhaust system included in the patent are for the elimination of vapors around the coater; they also afford better control of the fire hazard during processing. 3 figures. W.B.W.

DODGE, LLOYD L. Impregnated paper and method of making same. U. S. patent 2,637,665. Filed July 20, 1950. Issued May 5, 1953. 2 claims. Assigned 50% to Highland Manufacturing Company. [Cl. 117-158]

An improved moisture- and greaseproof paper is claimed, which is suitable to receive printing inks. Paper stock (e.g., sulfite, machine-glazed, supercalendered, glassine, or kraft) is impregnated with an aqueous sizing composition having a solids content of from 20 to 50% of a hydrogenated methyl ester of rosin, 20 to 50% of a glycerol ester of hydrogenated rosin, and from 20 to 50% paraffin wax. R.C.R.

DREW, DONALD E., and MITCHELL, JAMES A. Transfer sheets. Canadian patent 492,031. Filed May 23, 1944. Issued April 14, 1953. 12 claims. Assigned to E. I. du Pont de Nemours and Company.

An improved transfer sheet from which printings or coatings may be more easily stripped is claimed. A smooth dense nonporous sheet (regenerated cellulose, ethylcellulose, cellulose acetate, or glassine) is coated with a liquid containing an aminophosphatide such as lecithin. This coating is dried and the resulting surface used as a base on which to cast, coat, or print for later transfer. The lecithin may be combined with resins, pigments, cellulose derivatives, starch derivatives, or proteins for preparation of the coating solutions. An example of a coating solution given is: soybean lecithin, 15 parts; ethylcellulose (low viscosity), 15 parts; and toluene, 570 parts. W.B.W.

GROUSE, RICHARD A. Metallized paper capacitor. U. S. patent 2,637,766. Filed Jan. 11, 1949. Issued May 5, 1953. 7 claims. Assigned to A. H. Hunt Capacitors Limited. [Cl. 175-41]

An apparatus and a method for the manufacture of a printed metallized paper strip are described; the strip is wound into a roll to form an electrical capacitor of small size. The method is claimed to eliminate the necessity for the usual multiple-strip winding operation. A capacitor so formed has a low electrical capacity limited by the breakdown-voltage of the paper. 10 figures. W.B.W.

HAIR, EMMA. Disposable feeding bottle for babies. Canadian patent 492,173. Filed May 14, 1952. Issued April 21, 1953. 1 claim.

The disposable bottle is essentially a paper cup of conical shape. A cap is employed to hold the nipple and to form a liquid seal with the container rim. This is the same as U.S. patent 2,599,630 (June 10, 1952); *cf.* B.I.P.C. *22*: 882. 1 figure. W.B.W.

HIGGINS, SIGFRIED. Matrix sheet. Canadian patent 492,562. Filed April 12, 1948. Issued May 5, 1953. 10 claims. Assigned to Bakelite Company (Canada) Limited.

A thermosetting resin-fiber matrix sheet is brush coated on one side with a 10% solution of hydroxyethylcellulose. A matrix is formed by compression molding the sheet against an electrotype. Various thermoplastic materials can be molded against this matrix to produce printing plates, sound records, and similar molded articles. This is the same as U. S. patent 2,509,499 (May 30, 1950); *cf.* B.I.P.C. 20: 837. W.B.W.

JOHNSON, FLOYD K. Price marking label having pressure sensitive adhesive thereon. U. S. patent 2,636,297. Filed June 29, 1950. Issued April 28, 1953. 2 claims. Assigned to The Monarch Marking System Company. [Cl. 40-2]

The price marking labels with pressure-sensitive adhesive backing are processed in continuous strip form with lines of weakening between labels. It is claimed that a change of the shape of the feed aperture between labels from rectangular to diamond shape reduces the tendency of the label to tear upon removal of the backing strip. 6 figures. W.B.W.

MARCIN, BALAYS C. Manufacture of tapes and sheets with ad-

hesive coating on opposite sides thereof. Canadian patent 491,971. Filed Jan. 4, 1951. Issued April 14, 1953. 9 claims.

An interliner coated with suitable adhesive repellent is applied in strip form to the adhesive-coated base sheet, which may be of cellophane, paper, rubber, or textile material. The application of the strips in a staggered manner (i.e., on alternate sides of the sheet or tape) is claimed to stiffen the roll or stack of adhesive material, thereby permitting the use of a thinner base sheet. 7 figures. W.B.W.

MÜLLER, JEANNETTE. Napkin. Canadian patent 492,476. Filed Feb. 18, 1946. Issued April 28, 1953. 2 claims. Assigned to Pollux-Trust.

A disposable diaper has a bottom layer of absorbent cellulosic material, a second layer of nonabsorbent impregnated paper, a third layer similar to the bottom one, and a top or outer layer of wadding on a layer of paper. This is the same as U. S. patent 2,522,532 (Sept. 19, 1950); *cf.* B.I.P.C. 21: 141. 2 figures. R.C.R.

OZOLS, KARLIS V. Thermosensitive papers and compositions therefor. U. S. patent 2,637,657. Filed June 10, 1946. Issued May 5, 1953. 6 claims. Assigned to Product Development Laboratories, Inc. [Cl. 106-178]

The thermosensitive coating composition claimed comprises 60-80% of a lead organic acid salt (e.g., lead formate), 5-30% of a mercury organic acid salt (mercuric oxalate), and 2-15% of a binder (ethylcellulose). The composition may be added to the paper pulp or, in a solution of carbon tetrachloride, brushed on strips of sulfite or rag bond paper. When electric current supplies the heat, the paper may be graphite filled; when a heated stylus is used, the thickness of the coating may be 0.0002-0.001 inch. R.C.R.

ROUNSEVILLE, ELLSWORTH A., and ESTEE, RALPH G. Reinforced paper and method and apparatus for the manufacture thereof. U. S. patent 2,638,146. Filed Jan. 7, 1949. Issued May 12, 1953. 27 claims. Assigned to Glas-Kraft Inc. [Cl. 154-1.76]

A laminated sheet with glass-fiber reinforcing is claimed to be more satisfactory than the usual jute- or sisal-reinforced sheet. Glass fibers are thinner (which allows the use of less adhesive) and will also withstand creping without breaking. A restricting throat with an air jet is employed to deposit the glass fiber on the adhesive coated sheet. The fibers assume randomly looped paths on the coated surface; this imparts nondirectional strength to the laminated sheet. 13 figures. W.B.W.

SALO, MARTIN, and VIVIAN, HAROLD F. Translucent paper base. U. S. patent 2,635,970. Filed Nov. 26, 1948. Issued April 21, 1953. 2 claims. Assigned to Eastman Kodak Company. [Cl. 117-86]

A translucent paper (sulfate, sulfite, rag, cotton, linen, hemp, or rope stock) base for photographic uses is prepared by the hot-melt impregnation of a waterleaf sheet with cellulose acetate butyrate and chlorinated diphenyl. A coating of cellulose acetate butyrate plasticized with dibutyl sebacate and butyl stearate is next applied. Such paper is claimed to possess better strength and dimensional stability than papers used heretofore. 1 figure. W.B.W.

SAVAGE, RUSSELL H. Method of producing a flat moistureproof

paper lamination. U. S. patent 2,636,838. Filed April 14, 1947. Issued April 28, 1953. 10 claims. Assigned to The Mead Corporation. [Cl. 154-138]

An interlayer of wax is used to prevent curling of coated-one-side paper. A thin wax-resistant carrier sheet is first waxed with microcrystalline wax, then laminated to the coated sheet under carefully controlled conditions. Nip pressures during laminating are just sufficient to cause the wax to penetrate the surface fiber and produce a firm bond with the under side of the coated sheet. The web is preferably cut into sheets after lamination, rather than winding it on a roll. 4 figures. W.B.W.

WORTHEN, STEPHEN V. Paper planographic printing plate with stabilized hydrophilic coating. U. S. patent 2,635,537. Filed July 19, 1950. Issued April 21, 1953. 16 claims. Assigned to S. D. Warren Company. [Cl. 101-149.2]

A paper-base planographic printing plate is made by the application of a coating of mineral filler and a hydrophilic adhesive. A multivalent metal salt and a uni-univalent salt are used to fill the interstices of the coated surface. It is claimed that the inclusion of the uni-univalent salt results in a longer image life. This is a further amplification of U. S. patent 2,534,650 (Dec. 19, 1950); *cf.* B.I.P.C. 21: 371. W.B.W.

PLASTICS—PAPER-BASE

KROPA, EDWARD L., and WOHNSIEDLER, HENRY P. Reaction products of a polyethylene melamine and an alkyd resin. U. S. patent 2,582,704. Filed Nov. 25, 1950. Issued Jan. 15, 1952. 12 claims. Assigned to American Cyanamid Company. [Cl. 260-33.2]

A coating and molding composition comprises the product of the reaction of a polyethylene melamine (a polyamino-s-triazine with two of the amino nitrogens carrying ethylene groups instead of hydrogen atoms) and an alkyd resin containing unesterified hydroxyl groups; the polyhydric alcohol used in the preparation of the resin must be at least 25% in excess of the theoretical amount required for complete esterification of the carboxyl groups. Dissolved resins prepared in this manner can be used as laminating varnishes for coating and/or impregnating sheet materials (e.g., paper, cloth, etc.), superimposing them and then uniting them under heat and pressure. Pulp preforms for molded articles may contain the resins as impregnants. R.C.R.

PULP DRYING

WEISS, ALEXANDER C. H. Apparatus for treating pulp and resin mixtures. U. S. patent 2,637,915. Filed May 6, 1948. Issued May 12, 1953. 2 claims. [Cl. 34-57]

The apparatus described for dewatering and drying a mixture of kraft pulp and resin for injection molding consists of a dewatering drum from which the pulp mat is doctored, press rolls, a spiked roll for fluffing and fragmentizing the mat, and a baffled tunnel through which the pulp is conveyed by a blast of hot air. The moisture content of the pulp is controlled by the position of the baffles for more or less dwell time within the tunnel. The dried pulp at 5-7% moisture content is held in storage bins until needed in the injection molding process. 1 figure. W.B.W.

SHIPPING CONTAINERS

BELSINGER, SAMUEL P. One-piece fiberboard shipping container.

U. S. patent 2,635,802. Filed Dec. 15, 1949. Issued April 21, 1953. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-16]

A tall upright fiber or corrugated-board container is designed for easy packing of low density materials (e.g., bolts of knitted cloth). A front-door construction also makes the container useful for storage with easy access to the stored materials. 7 figures. W.B.W.

BUTTERY, KENNETH T. Collapsible carton. U. S. patent 2,637,484. Filed Aug. 19, 1949. Issued May 5, 1953. 3 claims. Assigned to Sutherland Paper Company. [Cl. 229-34]

This carton is designed for the shipping of heavy materials. Upon assembly, various parts of the carton are mutually self-supporting and bracing. The lid forms a separate piece and is not connected to the carton. 9 figures. W.B.W.

DENTON, CHARLES B., and TERHUNE, GEORGE A., JR. Thermometer package. U. S. patent 2,636,600. Filed May 22, 1950. Issued April 28, 1953. 3 claims. Assigned to Weston Electrical Instrument Corporation. [Cl. 206-65]

This container holds individual thermometers or like articles in a fixed position in the carton by utilizing two or more perforated spacers protruding through slots in the platform. A single unit may be removed by raising the platform above the edge of the carton at one end and slipping the unit out of the perforated spacer. Convenience in storage for the user as well as protection in shipping is claimed. 8 figures. W.B.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

HARTMAN, CARL H. Valve bag. U. S. patent 2,635,803. Filed May 2, 1950. Issued April 21, 1953. 4 claims. Assigned to St. Regis Paper Company. [Cl. 229-62.5]

A valve of the "tuck-in" sleeve type is designed for use in multiwall paper bags. The sleeve is formed from inner and outer walls; the inner sleeve is the longer. These sleeves are folded in such a manner that the valve prevents loss of materials from the bag. 8 figures. W.B.W.

STORAGE BATTERIES

WILSON, HARLAND D., and POPPER, CHARLES. Storage battery separators. Canadian patent 492,349. Filed Sept. 17, 1945. Issued April 28, 1953. 11 claims.

Purified cellulose fibers (such as alpha pulp or bleached kraft from western hemlock) are impregnated after web formation with a thermosetting resin, such as phenol-formaldehyde or a thermoplastic resin, using 25-40% of the resin on the weight of the dry separator. These impregnated sheets (moisture content preferably between 5 and 17%) are embossed with the desired pattern or corrugated before curing the resin. A wetting agent (Aerosol OT) may be added as a separate operation to the separator (or may be added to the electrolyte) to facilitate wetting of the resin impregnated fibers. Since these separators are produced under controlled conditions, it is claimed that uniform porosity, thickness, and flexibility are possible. In a modification of the above, a felted mat is formed from synthetic fibers of vinyl resin, such as a copolymer of vinyl chloride and vinyl acetate. The mat is bonded by heat and pressure to form a sheet of the desired shape and porosity. 7 figures. W.B.W.

WILSON, HARLAND D., and QUICK, JEAN H. Battery separator. Canadian patent 492,348. Filed Sept. 17, 1945. Issued April 28, 1953. 2 claims.

This is similar to Canadian patent 492,349 (*cf.* abstract above). Formation of ribs or ridges in the separator after setting of the resin by the use of high-speed grinding is described. Grooves are cut in the finished sheet to form the desired pattern of ribs to facilitate escape of gases and circulation of the eletrolyte. 4 figures. W.B.W.

TALL OIL

BRUINS, PAUL F., and KURTZ, EDWARD J. Vinyl resin plasticized with a mixture of a monohydric alcohol ester of the maleic anhydride adduct of rosin acid and a monohydric alcohol ester of a fatty acid. U. S. patent 2,585,222. Filed Feb. 25, 1949. Issued Feb. 12, 1952. 2 claims. Assigned to National Southern Products Corporation. [Cl. 260-27]

A plastic composition is claimed which comprises approximately 60 parts (by weight) of a vinyl plastic, 16-24 parts of dioctyl phthalate, and 16-24 parts of a plasticizer comprising a mixture of a monohydric aliphatic alcohol (e.g., butyl, isobutyl, propyl, and tetrahydrofurfuryl) ester of the maleic anhydride adduct (I) of rosin acid found in refined tall oil and a monohydric aliphatic alcohol ester of the fatty acids resulting from forming the adduct. The esters of (I) of rosin acids, without the presence of fatty acid esters, may be obtained by starting with wood rosin (from pine stumps) or gum rosin (from turpentine distillation). R.C.R.

TODD, RAYMOND W., and FUCHS, FRITZ E. Process for treating petroleum emulsions. U. S. patent 2,597,204. Filed March 19, 1951. Issued May 20, 1952. 11 claims. Assigned to Aquaness Corporation. [Cl. 252-342]

A demulsifier for breaking or separating water-in-oil petroleum emulsions comprises a class of esterification products obtained by the reaction of oxyalkylated polyhydroxy intermediates with a fatty acid to produce the desired ester. Tall oil may be used in place of the fatty acid to produce tall oil esters. R.C.R.

VANILLIN

BOCK, LOUIS H. Dibasic ether acid derivatives of vanillic acid. U. S. patent 2,630,454. Filed Nov. 28, 1950. Issued March 3, 1953. 1 claim. Assigned to Rayonier Incorporated. [Cl. 260-520]

Dibasic acids of the type related to the bis-ether derivatives of vanillic acid can be prepared by reacting vanillic acid (obtained from spent sulfite liquor), sodium hydroxide, and a compound having the formula XRX, where X is a halogen of atomic number between 17 and 35 inclusive and R is from the group consisting of $-(CH_2)_n-$ (n is 2—6), and $-CH_2CH_2OCH_2CH_2-$. R.C.R.

WAXES

BOWMAN, JOHN R., RIDENOUR, WILLIAM P., and WHITTAKER, JUNE H. Method of preparing petroleum wax compositions containing a small amount of polyethylene. U. S. patent 2,638,459. Filed

Dec. 4, 1950. Issued May 12, 1953. 9 claims. Assigned to Gulf Research & Development Company. [Cl. 260-28.5]

Petroleum-wax compositions with improved tensile strength are obtained by the introduction of high molecular-weight ethylene polymers; one application of such paraffin wax is in the manufacture of paper milk bottles. Incorporation of from 0.001 to 7% of the ethylene polymer (polyethylene), depending on the properties desired, may be used. Ethylene polymers have average molecular weights from 5000 to 25,000 (those having molecular weights in the range of 10,000 to 20,000 are preferred). Equal parts of the polymers and wax are mixed, preferably by milling at temperatures from 220 to 360°F. This mixture may then be added to the melted paraffin wax in the required amounts. W.B.W.

FISH, JOHN J. Method of preparing blends of hydrocarbon polymers and petroleum waxes. U. S. patent 2,601,109. Filed April 17, 1948. Issued June 17, 1952. 5 claims. Assigned to Sun Chemical Corporation. [Cl. 260-28.5]

Polyethylene and petroleum-wax material consisting of saturated hydrocarbons are treated with a metallic halide (aluminum, iron, and zinc and boron trifluoride) at temperatures above 200°F. but below the cracking point of the wax to produce a stable, homogeneous wax-like composition. Paper and paperboard containers may be coated with this material which shows no separation in the molten state when standing nor upon cooling, and which forms tough flexible nontacky and highly water-resistant coatings. R.C.R.

WET STRENGTH

AZORLOSA, JULIAN L., and HUG, DONALD P. Coated paper and process for making same. U. S. patent 2,635,972. Filed Feb. 3, 1950. Issued April 21, 1953. 14 claims. Assigned to Hercules Powder Company. [Cl. 117-157]

The addition of a water-soluble carboxyalkyl hydroxyalkyl cellulose derivative, such as a carboxymethyl hydroxyethyl cellulose salt (I), to paper stock results in a significant wet- and dry-strength increase of the treated paper. (I) may be applied either before or after web formation and requires no precipitant. A 1% aqueous solution of the sodium salt of 0.49-substituted carboxymethyl 0.375-substituted hydroxyethyl cellulose (prepared from a 2% solution having a viscosity of 37.5 centipoises) was applied to 37-lb. 100% rag paper by immersing the paper in the solution. Excess solution was removed by passing between rolls at a low nip pressure. The dried sheets contained 0.4% of (I) on the paper-weight basis. The Mullen-burst test for the treated paper was 116.5% that of the untreated paper. W.B.W.

MEIJER, HENDRIK W. Creaseproofing cellulose textiles with glucose-ureide formaldehyde condensation product. U. S. patent 2,596,268. Filed Jan. 12, 1949. Issued May 13, 1952. 3 claims. [Cl. 8-116.3]

Cellulose fibers (e.g., cotton, paper, cardboard, regenerated cellulose, etc.) are treated at pH 1-2 with a ureide (I) from the group of methylol-ketose and -aldose ureides in the presence of formaldehyde or a formaldehyde-yielding compound at 90°C. (I) is chemically fixed onto the fibers and is permanent and fast to washing. In one instance, 120 grams of glucose ureide were dissolved in 400 ml. of 40% formaldehyde solution at room temperature

and 10 grams of ammonium chloride in 80 grams of water were added. A piece of paper immersed in this solution for a few seconds was squeezed out to 100% wet pick-up and dried for three minutes at 90° at a pH of 2.5. The paper had increased 3% in weight and had a greater wet strength and resistance to folding. This treatment of paper fiber can be applied in the beater, to the wet web of paper, and to the finished paper. R.C.R.

ROBINETTE, HILLARY, JR., and PFEIFER, CHARLES W. Process for preparing ammonium salts of copolymer compositions. U. S. patent 2,621,169. Filed Dec. 18, 1948. Issued Dec. 9, 1952. 10 claims. Assigned to Publicker Industries Inc. [Cl. 260-78.5]

Ammonium salts of acidic copolymers (I) are prepared by dry blending equivalent amounts of ammonium carbonate with (I) formed by copolymerizing a compound such as styrene with an ethylene dicarbonyl compound (e.g., maleic anhydride). It is claimed that the wet strength of paper is improved by this product which is completely swellable in cold water and has little odor of ammonia. W.B.W.

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